IDA

INSTITUTE FOR DEFENSE ANALYSES

Training Community Modeling and Simulation Business Plan, 2007 Edition

Volume II: Data Call Responses and Analysis

Prepared for the Modeling and Simulation Steering Committee

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PREFACE

The purpose of Volume II of the Training Community Modeling and Simulation Business Plan (TMSBP) is to provide additional data and analysis details from a data call to the training community in the summer of 2007. This volume repeats some sections from Volume I of the TMSBP to allow contextual consideration of the detailed displays that follow. Both Volume I and Volume II of this revised edition of IDA Document D-3562 have been updated to accommodate the decision to approve the document for public release.

Volume I provides a detailed description of the initial review of the 130 models, simulations, and simulation tools that were identified as part of the Training Capabilities Analysis of Alternatives (AoA) base case of capabilities.

The data call completed for the TMSBP gap analysis was to determine modeling and simulation (M&S) training capabilities that are either currently available or will be available by the end of FY08. It was also to identify progress that had been made since the 2004 TC AoA, the current state of M&S training capabilities relevant to the AoA joint training gaps, and the gaps that remain to be filled.

An initial and partial review for the TMSBP identified 130 existing simulations and simulation tools that might address one or more of the TC AoA gaps. Individual consideration of all these simulations and simulation tools was beyond the scope of the TMSBP gap analysis. Instead, federations of simulations and simulation tools were selected as the focus of the analysis. In retrospect, it seems unlikely that examining available simulations and simulation tools would have led to substantially different conclusions and investment recommendations.

Eight federations composed of these simulations as federates were listed in Volume I and are described in more detail in this volume.

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FIGURE

TABLES

1. THE FEDERATIONS

Eight federations were selected for review:

- Joint Live Virtual Constructive (JLVC)
- Joint Multi-Resolution Model (JMRM)
- Joint Land Component Constructive Training Capability (JLCCTC) Multi-Resolution Federation (MRF)
- Joint Land Component Constructive Training Capability (JLCCTC) Entity Resolution Federation (ERF)
- Battle Force Tactical Trainer (BFTT)
- Navy Continuous Training Environment (NCTE) Federation
- USMC Deployable Virtual Training Environment (DVTE) Federation
- Air and Space Constructive Environment (ACE)

A description of each follows.

1.1 JOINT LIVE VIRTUAL CONSTRUCTIVE

The JLVC core provides an integrated backbone for training primarily targeted at JTF/COCOM level training (Tiers 1–2), although, as shown in Table D-1 (Appendix D), it provides training for Tiers 3–5 in several specific gap areas. It is composed of three major capabilities, planning, exercise control, and AAR.

JLVC integrates constructive entity-level stimuli with virtual and live simulations and simulators in a near-real-time synthetic environment. Its entity-level models and simulations represent Service combat, intelligence, and logistic systems. It enables the integration of virtual simulators with live range instrumentation to support training from COCOM staff and Service components down to tactical units and individual/crew trainers. It also provides training for a range of joint, interagency, intergovernmental, and multinational audiences, allowing Active Components, Reserve Components, State Police, Red Cross, and other national and state agencies to train together with joint and Service battle staffs.

JLVC employs the following federates and tools:

- Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions (SIMPLE)
- Air and Space Collaborative Environment Information Operations Suite (ACE–IOS)
- Armament Weapon System Interchangeability Matrix (AWSIM)
- Joint Conflict and Tactical Simulation (JCATS)
- Joint Deployment Logistics Model (JDLM)
- Joint Semi-Automated Forces (JSAF)
- Missile Defense Space Warning Tool (MDST)
- National Wargame Simulator – Next Generation (NWARS–NG)
- JCATS Low Overhead Driver (JLOD)
- Tactical Simulation (TACSIM)
- Joint Theatre Distribution System (JTDS)
- Multiple Unified Simulation Environment/Air Force Synthetic Environment for Reconnaissance and Surveillance (MUSE/AFSERS)
- Joint Distributed After-Action Review System (JDARS).

1.2 JOINT MULTI–RESOLUTION MODEL

JMRM uses the Joint Theater Level Simulation (JTLS) and the Joint Conflict and Tactical Simulation (JCATS) as its core models. JMRM has been applied to validate the concept of federate selection based on user functional requirements. Its name and capabilities derive from the need to simultaneously provide high-level aggregate simulation to support joint task force training events and entity-based representation to simulate tactical forces. JFCOM is integrating other federates into the JMRM federation. An entity-level server aggregates units to provide a common template for intelligence federates while offloading some of the entity-level representation requirements from JCATS.

JMRM employs the following federates and tools: Joint Theater-Level Simulation (JTLS), Joint Conflict and Tactical Simulation (JCATS), and Joint Deployment Logistics Model (JDLM).

1.3 JOINT LAND COMPONENT CONSTRUCTIVE TRAINING CAPABILITY MULTI-RESOLUTION FEDERATION

JLCCTC–MRF is one of two federations in the Army Constructive Training Federation (ACTF). JLCCTC–MRF is a medium-resolution federation designed for use at division level and above, including joint task forces. It is suitable for training functional and multifunctional support brigades that include intelligence, fires, aviation, air defense, and sustainment. Its primary training audiences are divisions and corps commanders and their battle staffs. If used in a smaller composition, MRF can also support training for brigade combat teams. The collection of simulations, interface devices, security systems, and communication nodes in JLCCTC–MRF is designed to allow for battle command training over a distributed network or at individual nodes. It enables stimulation of Army Battle Command Systems and provides a digital Common Operational Picture. It allows selected small units to realistically replicate high resolution combat activities and features a non-kinetic event model and supports detailed logistical and intelligence play.

JLCCTC–MRF employs the following federates and tools:

- Corps Battle Simulator (CBS)
- Joint Deployment Logistics Model/Logistics Federation (JDLM/LOGFED)
- Tactical Simulator (TACSIM)
- Joint Non-Kinetic Effects Model (JNEM)
- Independent Stimulation Module (ISM)
- WARSIM Intelligence Module (WIM)
- Joint Conflict and Tactical Simulation (JCATS)
- Tactical Simulation (TACSIM)
- National Wargame Simulator (NWARS)
- Multiple Unified Simulation Environment (MUSE)
- After Action Review System (AARS).

1.4 JOINT LAND COMPONENT CONSTRUCTIVE TRAINING CAPABILITY ENTITY RESOLUTION FEDERATION

JLCCTC–ERF is a high-resolution federation designed for use at the brigade combat team level and below. It is suitable for training functional and multifunctional support brigades that include intelligence, fires, aviation, air defense, and sustainment. The primary training audiences for JLCCTC–ERF are brigade combat team commanders

and battle staffs serving in a Joint Task Force. It can support limited training for brigade internal operations, with representation of supported units only as necessary to create service "demands." JLCCTC–ERF is a collection of constructive simulations, interface devices, security systems and communication nodes designed to allow for battle command training over a distributed network or at individual nodes. It enables stimulation of Army battle command systems, provides a digital common operational picture, and allows for battle command training. It includes a reduced overhead training system for delivering routine digital training of battle staffs at all levels.

JLCCTC–ERF also provides interfaces and models that enable company, battalion, and brigade training audiences to meet their C2 training objectives in a joint, combined environment. It allows realistic replication of urban MOUT operations and includes detailed intelligence play and fairly robust logistical representation.

JLCCTC–ERF employs the following federates and tools:

- Corps Battle Simulator (CBS)
- Joint Deployment Logistics Model/Logistics Federation (JDLM/LOGFED)
- Tactical Simulator (TACSIM)
- Joint Non-Kinetic Effects Model (JNEM)
- Independent Stimulation Module (ISM)
- WARSIM Intelligence Module (WIM)
- Joint Conflict and Tactical Simulation (JCATS)
- Tactical Simulation (TACSIM)
- National Wargame Simulator (NWARS)
- Multiple Unified Simulation Environment (MUSE)
- After Action Review System (AARS).

1.5 BATTLE FORCE TACTICAL TRAINER

BFTT supports training and mission rehearsal across all warfare areas and naval force elements, ranging from "deck plate" operators and decision-makers through commanding officers, to afloat training organization (ATO) and battle group/battle force (BG/BF) commanders. BFTT employs a distributed, simulation-based architecture that networks existing and evolving on-board and embedded training systems. It supports training for integrated forces or independent ships worldwide across the full command and decision line, including multiple warfare areas for vessels in port and staffs ashore or

embarked. Shipboard subsystem training capabilities are organic and designed around existing onboard/embedded trainer configurations. Stimulation/simulation of the combat system is transparent to the operators. All controls and displays are in a tactical mode. Combat system monitoring devices are non-intrusive and have no negative impact on system operation. BFTT collects selected data to provide real-time and post-event feedback of operator and team performance and transmission in real or near-real time to a shore site for further processing after a training event. Performance assessment reports cover all command levels from the battle group commander through individual operators aboard ship.

BFTT employs the Joint Semi-Automated Force (JSAF) federate.

1.6 NAVY CONTINUOUS TRAINING ENVIRONMENT FEDERATION

NCTE and Joint Forces Command's Joint Training and Experimentation Network (JTEN) enable real-time battle simulation for top-level staff training aboard ships with optional links to Air Force and Army training simulators.

NCTE employs the following federates and tools: Battle Force Tactical Trainer (BFTT), Joint Semi-Automated Force (JSAF), SIMTT, HLAanalyzer, Analysim.

1.7 USMC DEPLOYABLE VIRTUAL TRAINING ENVIRONMENT FEDERATION

DVTE is a first-person skills sustainment trainer for the Marines. DVTE provides a custom-built Combined Arms Network covering most USMC ground and air weapon systems and is a USMC critical capability for JNTC participation. DVTE also serves as a platform for delivering individual and team training simulations, including a family of tactical decision games called the Infantry Tool Kit. DVTE uses a simulation network with reconfigurable workstations. Individuals select a weapon, vehicle, or leadership billet and then join a virtual battle space where other individuals and synthetic forces are engaged in virtual operations. Individual Marine Air-Ground Task Force (MAGTF) skills can be trained in this virtual environment using Joint Semi-Autonomous Force (JSAF). DVTE provides a flexible, deployable training system for combined arms, MAGTF, and Naval Integration training. It specifically relies on the MAGTF Tactical Warfare Simulation (MTWS) and the Combined Arms Command and Control Trainer System Upgrade (CACCTUS), which is an upgrade of the Combined Arms Staff Trainer (CAST).

CAST provides fire-support training for the MAGTF elements up to and including the Marine Expeditionary Brigade (MEB) level. It provides staff training for battalion and regimental size organizations as well as MAGTF headquarters staffs. The Combined Arms Command and Control Trainer System Upgrade (CACCTUS) upgrades CAST, providing more realistic training for MAGTF staff elements in fire-support employment, coordination, and integration, and providing interoperability between Marine Corps Ground training systems and the Joint National Training Capability Complex. In addition, CACCTUS provides a robust after-action playback capability, a realistic C4I tactical data system, and interoperation with operational communications equipment. Finally, MAGTF Tactical Warfare Simulation (MTWS) is the Marine Corps advanced tactical combat simulation designed as a decision-support system in real and constructive environments to augment Marine Corps Command and Control systems. MTWS provides interactive, multi-sided, force-on-force, real-time modeling and simulation for stand-alone tactical combat scenarios for air, ground, surface, and amphibious operations. The system is also capable of integrating with other service models of the Joint Training Confederation (JTC) through the Aggregate Level Simulation Protocol (ALSP).

DVTE employs the following federates: Joint Conflict and Tactical Simulation (JCATS), Combined Arms Command and Control Trainer System Upgrade (CACCTUS), MAGTF Tactical Warfare Simulation (MTWS).

1.8 AIR AND SPACE CONSTRUCTIVE ENVIRONMENT

ACE is the constructive element and integrator for the Air Force's Distributed Mission Operations (DMO) capability, which combines live, virtual, and constructive simulations to support training, mission rehearsal, and operations. ACE provides air and space simulation of a full theater of war environment. It is a collection of M&S capabilities that provide the foundation for Air Force live, virtual, and constructive components in a Distributed Mission Operations (DMO) environment. DMO is the Air Force initiative supporting the DoD Strategic Plan for Training Transformation. ACE provides the air and space power representation within JNTC and enables Joint air component headquarters and other elements of the C2 Constellation (C2C) to create an air and space synthetic environment for training and operations.

ACE employs the following federates and tools:

- Armament Weapon System Interchangeability Matrix (AWSIM)
- Information Operation Suite (IOS)

- Logistics Simulation (LOGSIM)
- Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS)
- Graphical Input Aggregate Control System (GIAC)
- Command and Control Simulation Interface (CSI)
- Architecture Assessment Tool (AAT).

2. DATA CALL REQUESTS

Response requests were sent to the following organizations managing the federations:

- Joint Warfighting Center (Joint Training Directorate)
  - Joint Live Virtual Constructive (JLVC) Federation
  - Joint Multi-Resolution Model (JMRM) Federation
- Army Program Executive Office for Simulation, Training, and Instrumentation
  - Multi-Resolution Federation (MRF) Federation
  - Entity Resolution Federation (ERF) Federation
- Navy Fleet Forces Command (Training Operations Directorate)
  - Battle Force Tactical Trainer (BFTT) Federation
  - Navy Continuous Training Environment (NCTE) (Naval Warfare Development Group)
- Marine Corps Training and Education Command
  - Deployable Virtual Training Environment (DVTE)
  - Air Force Agency for Modeling and Simulation
  - Air and Space Constructive Environment (ACE) Federation

The data call requested responses using a spreadsheet that listed and described the TC AoA gaps. Respondents used the spreadsheet to describe the following:

- Major training M&S enhancements that had occurred to fill each gap.
- The extent to which each of the five levels of training audience are now being served by the enhancements.
- Remaining major shortfalls in filling the gap.
- Solutions that might be pursued to address the remaining shortfalls.
- Any comments the respondent(s) wished to add.

Figure 2-1 is an example spreadsheet with its instructions for providing this information.

Table D-2 (Appendix D) lists responses received, organized by TC AoA gap.

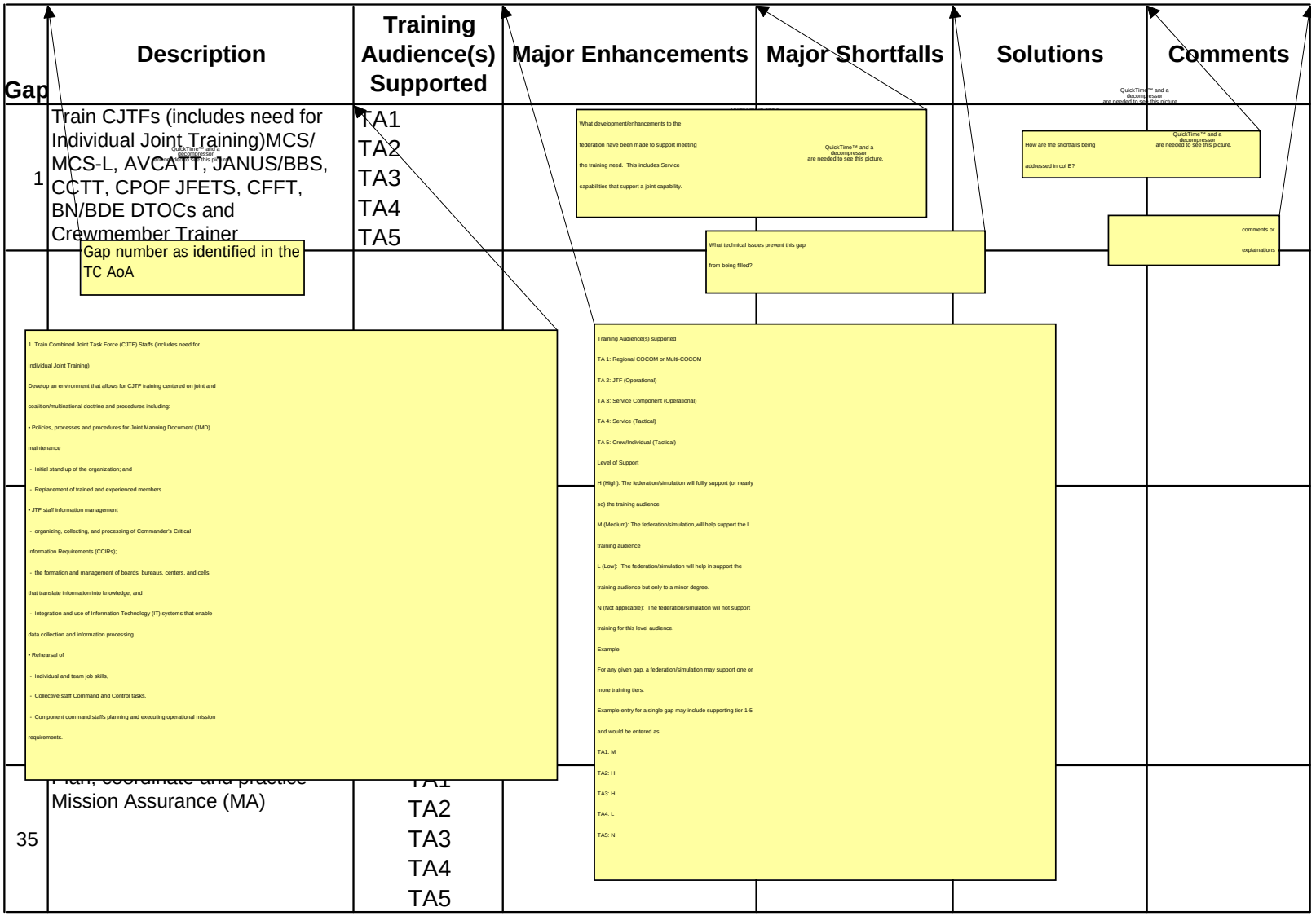

Figure 2-1. Example Spread Sheet with Instructions to Respondents Displayed

3. DATA ANALYSIS

M&S enhancements and remaining shortfalls were reviewed to determine the extent to which current capabilities and those planned for completion in FY 08 would fill each TC AoA joint training gap. At a more granular level, the extent to which various training audiences were being addressed was also examined to determine how well each training audience was being served by current and planned capabilities. Five training audience descriptors were used in the data call:

Training Audience Level 1: Regional COCOM or Multi-COCOM

Training Audience Level 2: JTF (Operational)

Training Audience Level 3: Service Component (Operational)

Training Audience Level 4: Service (Tactical)

Training Audience Level 5: Crew/Individual (Tactical)

Respondents were requested to assess the amount of support the federation they were reporting on provided to each training audience level for each gap. They were asked to assign one of four degrees of support provided (High, Medium, Low, or Not at all) to each training audience level. Table D-2 shows responses to this question, summed across all responding federations, for each TC AoA gap.

High and Medium responses were summed for each training audience in each TC AoA gap, and separately, the number of Low and Not At All responses were summed for each training audience in each gap. This process was used to determine the extent to which each training audience was being addressed by current and planned activities and the extent to which each TC AoA gap was being addressed. A high value for High+Medium signified substantial attention being paid to a training audience or a gap, and a high value for Low+Not Applicable signified limited attention. These sums are shown for each training audience in Table 3-1. The table suggests that, with the exception of Level 5 (Crew and Individual Training), the training audiences Levels 1–4, from COCOM levels down through Service tactical levels, are receiving equitable attention. More attention does appear to be needed at Level 5, however.

Table 3-1. Reported Extent of Training Audience Support Summed over the Data Call Federations

Ratings[a] Summed over Federations	TA(1) Regional COCOM or Multi-COCOM	TA (2) JTF (Operational)	TA (3) Service Component (Operational)	TA(4) Service (Tactical)	TA (5) Crew & Individual (Tactical)
High	108	117	104	69	26
Medium	53	54	54	100	37
Low	32	31	46	30	71
Not Applicable	87	78	76	81	146
High + Medium	161	171	158	169	63
Low + Not Applicable	119	109	122	111	217

[a] High: The federation/simulation will fully support (or nearly so) the training audience
Medium: The federation/simulation will support the training audience
Low: The federation/simulation will support the training audience to a minor degree
Not applicable: The federation/simulation will not support the training audience.

Further, this analysis, using data shown in Table D-2 (Appendix D), suggests which TC AoA gaps are being well addressed by current efforts. Gaps in the upper quartile of those receiving attention in the post-AoA years appear to be the following (listed here with their TC AoA priorities):

1. Train combined joint task force staffs (although more attention to individual joint training appears may still be needed).
2. Train standing joint force headquarters staff (again, more attention to individual joint training may be needed).
4. Provide faster/higher fidelity mission rehearsal.
7. Train forces in a joint interagency intergovernmental, multinational environment (including intelligence community participants).
8. Provide homeland defense training.
22. Train intelligence community as they fight (including all levels as a tactical participant).
24. Train staff to coordinate personnel recovery operations.
28. Operations/intelligence center training, integration, and command education.

Gaps in the lower quartile of those receiving attention in the post-AoA years appear to be the following (again listed here with their TC AoA priorities):

11. Train to operate in chemical, biological, radiological, nuclear, and electromagnetic environment.
15. Practice AC/RC integration and mobilization training.
17. Train forces on military assistance to civilian authorities operations.
21. Train routinely with new adaptive planning and deployment system.
23. Train the Joint Interagency Coordination Group.
29. Strategic information assurance.
30. Continuity of operations.
35. Plan, coordinate and practice mission assurance.

The average TC AoA rank of gaps that were receiving substantial attention (upper quartile) was 12.0. The average TC AoA rank of gaps that were receiving limited attention or none at all was 22.6. It appears, then, that the level of attention a gap receives is related to its 2004 priority.

Identification of candidate investments followed a more qualitative procedure, based on the above training audience analysis and reported enhancements, major shortfalls remaining, solutions suggested by respondents, and respondents' comments.

4. INVESTMENT RECOMMENDATIONS

Sixteen candidate investments were identified. They are shown in Table 4-1 roughly in order of priority as provisionally assigned by the TMSBP group along with the TC AoA gap(s) they are intended to address. Table 4-2 is similar to Table 4-1, but starts with each TC AoA gaps and identifies which candidate investment(s) will address it. This table shows 10 gaps that are not addressed by any candidate investment. These gaps appear to be either already filled by existing capabilities, more properly designated as exercise design issues than as needed M&S training capabilities, or they are training, but not M&S, issues.

Table 4-1. Candidate Investments, Ranks, and TC AoA Gaps Addressed

Candidate Investment	Priority Rank[a]	TC AoA Gap(s) Addressed
(1) Develop a standard common object model that defines unit objects played by entity and aggregate-level simulations.	1.5	1, 2, 14, 21, 26, 30
(2) Develop M&S capabilities for rapidly producing initialization-ready, mission-environment databases that cover correlated terrain data.	1.5	4, 19, 22
(3) Develop scenario-based individual training and small team M&S development capabilities that allow locally usable, rapid simulation and scenario generation and/or editing.	3	1, 2, 4, 5
(4) Develop M&S architecture specifications for common M&S data initialization of operational environments.	4	1, 2, 14, 21, 26, 30
(5) Develop M&S capabilities for rapidly producing initialization-ready, mission-environment databases that cover logistics, engineering infrastructure, networks, power lines, and information grids.	6	6, 12, 16, 22, 34
(6) Develop capabilities for cross domain security (CDS) and multinational information sharing (MNIS) in training M&S.	6	6, 7
(7) Develop M&S capabilities for rapidly producing initialization-ready, mission-environment databases that cover unit and electronic order of battle.	6	4, 13, 19, 22
(8) Develop specifications for a common, general-purpose interface that provides a common and interoperable “look and feel” across different simulations.	8	1, 2, 8, 9, 14, 21, 26, 30

Candidate Investment	Priority Rank[a]	TC AoA Gap(s) Addressed
(9) Develop M&S capabilities for rapidly producing initialization-ready, mission-environment databases that cover economic, diplomatic, political, and other civilian population factors.	9.5	7, 8, 12, 16, 17
(10) Develop M&S capabilities for representing nonkinetic warfare domains including HUMINT.	9.5	6, 18, 19, 22, 28
(11) Develop M&S capabilities for rapidly producing initialization-ready, mission-environment databases that cover medical, public health facilities.	12	1, 2, 5, 6, 7, 8, 12, 28
(12) Develop M&S capabilities for representing nonkinetic warfare domains including information operations.	12	6, 12, 16, 22, 34
(13) Develop M&S capabilities for representing nonkinetic warfare domains including network warfare.	12	6, 12, 16, 22, 34
(14) Develop M&S capabilities to portray second order effects in Effects Based Planning and Operations at all levels (tactical, operational, and strategic).	14.5	1, 2, 6, 7, 8, 12, 28, 32
(15) Develop M&S capabilities for representing nonkinetic warfare domains including electronic warfare.	14.5	6, 12, 16, 19, 22
(16) Develop CBRNE detection and effects capabilities for training M&S that include effects on civilian populations and infrastructure.	16	9, 10, 11, 25, 32

[a] There are duplicate rankings where there were ties in the priority rankings assigned by the TMSBP group.

Table 4-2. TC AoA Gaps Addressed by Candidate Investments

2004 TC AoA Gaps Listed in Order of TC AoA Priority	Candidate Investment(s)
1 Train combined joint task force staffs (includes need for individual joint training)	1, 3, 4, 8, 11, 14
2 Train standing joint force headquarters staff (includes need for individual joint training)	1, 3, 4, 8, 11, 14
3 Train on crisis action planning and deployments	(None)
4 Provide faster/higher fidelity mission rehearsal	2, 3, 7
5 Train forces on joint urban operations	3, 11
6 Train forces on IO (including information warfare, computer network exploitation, computer network defense, and computer network attack)	5, 6, 10, 11, 12, 13, 14, 15
7 Train forces in a joint, interagency, intergovernmental, multinational environment (including intelligence community participants)	6, 9, 11, 14
8 Provide homeland defense training	8, 9, 11, 14
9 Provide multicommand missile defense training	8, 16
10 Train forces in enemy chemical, biological, radiological, nuclear, and electromagnetic exploitation and destruction	16
11 Train to operate in chemical, biological, radiological, nuclear, and electromagnetic environment	16
12 Train on effects-based planning/operations	5, 9, 11, 12, 13, 14, 15
13 Train theater/strategic forces to conduct C4I operations using collaborative information environment	(None)
14 Train forces on realistic logistics requirements (including reception staging and onward movement integration)	1, 4, 8
15 Practice AC/RC integration and mobilization training	(None)
16 Train forces on stability and support operations	5, 9, 12, 13, 15
17 Train forces on military assistance to civilian authorities operations	9
18 Train Special Operations Forces and conventional forces for integrated operations	10
19 Train forces (operational and tactical level) to use national intelligence systems	2, 7, 10, 15
20 Train routinely with the joint operation planning and execution system	(None)
21 Train routinely with new adaptive planning and deployment system	1, 4, 8
22 Train intelligence community as they fight (including all levels as a tactical participant)	2, 5, 7, 10, 12, 13
23 Train the Joint Interagency Coordination Group	(None)
24 Train staff to coordinate personnel recovery operations	(None)
25 Train global ballistic missile defense	16
26 Conduct global strike training	1, 4, 8
27 Train critical infrastructure protection	(None)

2004 TC AoA Gaps Listed in Order of TC AoA Priority	Candidate Investment(s)
28 Operations/intelligence center training, integration, and command education	10, 11, 14
29 Strategic information assurance	(None)
30 Continuity of operations	1, 4, 8
31 Train on operational systems (dedicated bandwidth)	(None)
32 Train on consequence-management operations	14, 16
33 Provide special operations crisis action procedures training	(None)
34 Provide intelligence community Special Operations Forces specific training at the operational level	5, 12, 13
35 Plan, coordinate, and practice mission assurance	(None)

5. DESCRIPTION OF ONGOING AND POTENTIAL M&S PROJECTS

The July 2004 TC AoA identified models and federations that were identified by the Services, JFCOM, and the intelligence community as relevant to joint training requirements:

- Logistics Federation (LOGFED).
- Warfighter's Simulation (WARSIM).
- One Semi-Automated Force (OneSAF).
- Army Constructive Training Federation (ACTF).
- Deployable Simulation for Collaborative Operations (DISCO).
- Adaptive Communications Reporting Simulation (ACRES).
- Information Warfare Effects Generator/Dynamic Communications Environment (IWEG/DCE).
- National Wargaming Simulation-Next Generation (NWARS-NG).
- Air Force Modeling & Simulation Training Toolkit (AFMSTT).
- Air Force Synthetic Environment for Reconnaissance and Surveillance/Multiple Unified Simulation Environment (AFSERS/MUSE).
- Suite of five computer simulation models for warfare command and control (JQUAD+).
- Joint Semi-Automated Forces (JSAF).
- Joint Theater-Level Simulation (JTLS).
- Joint Conflict and Tactical Simulation (JCATS).

Chapter V of the TC AoA final report, "Effectiveness Assessment," rated each of these simulations for its contributions to removing the training gaps listed in Chapter III of the report. It was observed that "taken together current simulations have significant capability for removing the TC AoA Training Gaps."

Since the summer of 2004 several funded efforts have been tailored specifically to enhance the "base case" simulations identified above and move toward further close training gaps. In addition, after the publication of the TC AoA, a Program Decision

Memorandum (PDM) identified $94 million in funding across FY 06–11 to support work in the three recommended alternative areas:

- **Alternative #3, Modeling and Simulations.** The AoA recommendation for achieving the objectives defined in the Alternative 3 course of action is to produce a Joint modeling and simulation (M&S) live, virtual, and constructive Toolkit. The Toolkit will consist of existing programs of record that can be tailored to meet the needs of the Joint user. Enhancements to these existing capabilities will be designed to close the functional gaps in Joint training requirements. A major advantage of this approach is that it gives DoD the ability to insert an emerging technology or existing system—examples are specialized models for Homeland Security training and for joint command-and-control COCOM training—into the architecture. The functional capability of the M&S tools in the Toolkit and the needs of the training audience, training objectives, will drive the composition of a simulation federation. This Alternative was funded at $43 million across FY06–11.
- **Alternative #4, Innovative Acquisition.** "The AoA Senior Steering Group directed a prototype activity to determine the viability of the business model described in Alternative 4.…The focus of the prototype is to explore the alternative business approach to acquiring training.…In simple terms, the prototype is about business efficiencies for providing training." Although the activities funded under this alternative are to examine the business aspects of purchasing training products and services, the functional training content provided to sponsoring COCOMs will also address one or more TC AoA training gaps. This alternative was funded at $14 million across FY06–11.
- **Alternative #5, Re-engineering Training.** "Re-engineering Joint training requires the Department of Defense to initiate two revolutionary changes to the Joint training construct. The first action is the near term objective to provide COCOMs with the personnel, funding, and the Joint training technology alternatives required to meet joint individual and staff training requirements." The Joint training technology alternatives identified in Alternative 5 provide the on-demand and composable capability required by COCOMs to conduct training for individuals and staff serving in Joint Force headquarters from Component Commands through Combatant Commands. These alternative technologies, which are defined in Chapter IV of the AoA and listed below, were funded at $37 million across FY06–11. Several of the alternative technologies are currently being funded in efforts led by Joint Forces Command:
  - Lightweight Simulations/Federations
  - Massively Multi-Player Gaming

- Story Driven Training
- Joint Community Unique Federates
- Instructor Support Tools
- Embedded Training

Several of the alternative technologies are currently being funded in efforts led by JFCOM. The Joint Staff also sponsored joint training functional specialists working at their respective COCOMs. This alternative was funded at $37 million across FY 06–11. A series of initiatives by the COCOMs and Services have been underway following the TC AoA.

5.1 M&S TOOLS

In addition to ongoing projects and alternative technologies, M&S capabilities that enable the creation and execution of simulated environments and analysis of the simulation results are important. The following is a list of capabilities and their definitions:

- **Joint Multi-Resolution Model Federation.** JMRM is a composable federation that uses the Joint Theater Level Simulation (JTLS) and the Joint Conflict and Tactical Simulation (JCATS) as the "core" models in the federation. JMRM's name and capability are derived from the need to provide both high-level aggregation simulations to support the JTF-level training and simultaneously provide entity-level representations to simulate the tactical force components of the JTF.
- **Joint Live, Virtual, and Constructive Federation.** JLVC Federation is focused on seamlessly integrating constructive entity-level stimuli with virtual and live simulations and simulators in a near-real-time synthetic environment. This federation comprises entity-level models and simulations that represent Service combat, intelligence, and logistic systems, including JCATS, JSAF, AWSIM, ACE–IOS, TACSIM, NWARS–NG, and JDLM. The federation enables the integration of virtual simulators and live range instrumentation to support training from COCOM staff and Service components, down to tactical units and individual/crew trainers.
- **Joint Training and Experimentation Network.** JTEN is a global network providing the backbone and connectivity for the live, virtual, and constructive simulation components to support a wide spectrum of joint and Services training requirements.
- **Joint Training Information Management System.** JTIMS is a Web-based system designed to provide automated support to the Joint Training System (JTS). JTIMS directly supports the task-based, closed-loop features of the

JTS by facilitating the development of an integrated task-based thread to guide all JTS training activities.

5.2 DATA SOURCES

Appendix A details data sources for models and simulations.

5.3 OTHER

Appendix B and Appendix C give other supporting documents for the data call. The other tables for the data call and data call analysis are in Appendix D.

APPENDIX A—DATA SOURCES

ORDER OF BATTLE DATA SOURCES

CFDB—Conventional Forces Database

This database has U.S. force information only, to the company level for the Army. This is effectively battalion-level information for the Marine Corps, wing-level information for the Air Force, ship- and battalion-level information for the Navy and Coast Guard, and a mix of information for joint forces. The information is based on what the units tell the producer of the CFDB is in their units. If the user does not provide updated information, the database uses the last reported information, making many units way out of date. The information for the equipment is at the logistics level not at system level. The impact of this is that when looking for an M1A2 tank, for example, there will be a listing for a "full tracked combat tank with 120 MM gun," a separate listing for "one .50 Cal Machine Gun Fixed," another separate listing for "2 7.62 MM machine gun rh feed," and yet another separate listing for an "M259 grenade launcher." This is not so bad except when there are many pieces of equipment that can be combined in different ways to produce different systems.

MIDB—Modern Integrated Database

This database includes only foreign information. The force portion of this database is at the battalion level. This is an intelligence database and only shows information that can be confirmed. So if they see a Battalion area and can only see 28 tanks then the battalion has 28 tanks no matter what the TOE of the unit is. Several of the entries are marked "NFI," no further information.

FORSGEN—Force Generation Database

This data contains information at the battalion level for several countries in the future and company-level information for the BCTP Heavy and Light OPFOR.

CFE—Conventional Forces Europe

This is a listing of equipment available to European forces, also to include the U.S. forces in Europe. It is at the battalion level, and the listing is produced by the owning nation (i.e., the German units have the information in German).

TUCHA—Type Unit Characteristics

These data are used to support TRANSCOM in transportation of units by military transport. It seems to have information in common with the CFDB and the same problems.

Army MTOE—Army Modified Table of Organization and Equipment

This is a listing of what units should have and is similar to the CFDB for the Army. The information tends to be of higher accuracy.

Army MTOE Company Level

This is an attempt by the Army to improve the fidelity of the unit data available. This database is the MTOE database broken down into platoon-, section-, and squad-sized units. The problem with database is that some of the crucial holdings remain at the company or HHC unit, for example, the M16s and pistols for the whole company are in the company headquarters.

INTELLIGENCE DATABASES

DAFIF—Digital Aeronautical Flight Information File

This is a National Imagery and Mapping Agency (NIMA) produced file of airfield information throughout the world.

DVOF—Digital Vertical Obstruction File

This is a listing of vertical obstructions with standard height types and location data. The data can be produced at different classification levels.

MIDB—Modern Integrated Database

The facility portion of the database has a listing of installations by BE Number and facilities by BE Number and O-Suffix. The location data tend to be of questionable quality. Numerous records are inactive, but not marked in the record status field that way, or the person doing the query does not use that a query criterion. The facilities have a Category Code that gives the user an idea of what the facility is, and that information is easily parsed.

DIMPI—Desired Mean Point of Impact

This is targeting-quality information tied to the BE Numbers and O-Suffix and then a five-digit alphanumeric identifier. Intelligence groups or agencies usually hold the

information. The location is a usually based on mensurated imagery. It appears that a small percentage of BE facilities have DMPI data. The only description of the DMPI target is a free text field, so there is no means of having an automated means of determining what the target is.

TERRAIN SOURCES

Vector Product Format (VPF) Sources

VMAP0—Vector Smart Map Level 0

This is feature information and has a base source of the Operational Navigational Chart (ONC) Scale 1:1,000,000. Being based on a cartographic product, placement errors creep in due to specification requirements of digitizing a cartographic product instead of going to an imagery base. The coverage is near worldwide.

VMAP1—Vector Smart Map Level I

This is feature information and has a base source of the Joint Operation Graphic (JOG) Scale 1:250,000. It has the same problems as Level 0 but not as severe. Coverage is about 70% of the world's land surface.

VMAP2—Vector Smart Map Level II

This is feature information and has a base source of the 1:50,000 Scale Topographic Line Map, the standard map for tactical training. It has the same problems as Level I but not as severe. Coverage is almost nonexistent.

UVMAP—Urban Vector Smart Map

This is feature information and has a base source of City Plans with scales between 1:5000 and 1:25,000. It has the same problems as Level II but not as severe. Coverage is over many cities outside the United States. Some data may be classified. This product will have significant and isolated buildings on it, but it will also have many areas of urban tint.

DTED0—Digital Terrain Elevation Data Level 0

This is only elevation data with 1 km grid posts. The coverage is near worldwide.

DTED1—Digital Terrain Elevation Data Level I

This is only elevation data with 100 m grid posts. The coverage is about 80% of land surface.

DTED2—Digital Terrain Elevation Data Level II

This is only elevation data with 30 m grid posts. The current coverage is about 10% of land surface. The coverage should be near worldwide after the shuttle mission data are processed, but that is taking longer than expected.

DTED3—Digital Terrain Elevation Data Level III

This is only elevation data with 10 m grid posts. The coverage is insignificant.

DTED4—Digital Terrain Elevation Data Level IV

This is only elevation data with 3 m grid posts. The coverage is insignificant.

DTED5—Digital Terrain Elevation Data Level V

This is only elevation data with 1 m grid posts. The coverage is insignificant.

TOD0—Tactical Ocean Data

This bottom contour data with similar fidelity to an ONC. There are varying levels for this product, but as the level increases, so does the classification.

WVS—World Vector Shoreline

This is shoreline data at 1:1,000,000 scale. Coverage is near worldwide. This is unclassified.

DNC—Digital Nautical Chart

This is shoreline data at varying scales.

VITD—Vector Interim Terrain Data

This data set has very intensive terrain information. The types of information available include tunnel heights, terrain slopes, flowing water speeds, road widths, among others. The products should have varying classifications from unclassified to secret NOFORN. Coverage is probably on the order of 5%. The information is collected at a 1:50,000 scale resolution.

FFD—Feature Foundation Data

This data set is picked up at a scant JOG level density. These data have photogrametric accuracy. The coverage of this data set is on the level of 10%, and it is unclassified.

DTOP

This data set became VITD. Coverage is insignificant.

MSDS—Mission-Specific Data Sets

These data sets were to be produced on demand from FFD to meet user specifications. Coverage is insignificant.

Geographic Information System Sources

CAD Files—Computer Assisted Drawing Files

These files contain building interiors and exteriors and are from many different producers.

Shape Files

Files produced by software similar to Arc View. These files contain detailed terrain information over small areas and are produced by many different companies. NIMA is acquiring significant holdings of this type.

Country GIS Databases

This is a merging of available VPF and shape file data to produce features for GIS tools and military use. The holdings are on the order of 10%, but rapidly growing. The accuracy and density of information varies radically within a single product, but it will accept user improvements.

ITD—Interim Terrain Data

This data set is identical to VITD, except it is in a format called “standard format.” Coverage is less than VITD.

PITD – Planning Interim Terrain Data

This data set is identical to ITD, except it is collected at a 1:250,000 scale. Coverage is insignificant.

Raster Data

ADRG—Arc Digitized Raster Graphic

This is the standard map background for computer workstations.

CADRG—Compressed Arc Digitized Raster Graphic

CADRG a more efficiently packaged version of ADRG.

CIB 10M, 5M, and 1M—Controlled Imagery Base 10 m, 5 m, and 1 m

This is satellite imagery that is semirectified to geographic coordinates and has a pixel resolution of either 10 m, 5 m or 1 m.

Hard-Copy Information

TTADB—Tactical Terrain Analysis Database

This is a grouping of Mylar overlays that can sit on top of a 1:50,000-scale map. The information available is identical to the VITD. Coverage was about 15%; this is a dead product and being disposed of.

PTADB—Planning Terrain Analysis Database

This is identical to the TTADB except it is at a 1:250,000 scale. Coverage was about 15%; this is a dead product and being disposed of.

GNC—Global Navigation and Planning Chart

This is an air navigation chart at 1:5,000,000 scale. It has worldwide coverage. This product has almost no topographic features except airfields and major roads.

JNC—Jet Navigation Chart

This is an air navigation chart at 1:2,000,000 scale. It has worldwide coverage. This product has almost no topographic features except airfields and major roads.

ONC—Operational Navigation Chart

This is an air navigation chart at 1:1,000,000 scale. It has worldwide coverage. This product has almost no topographic features except airfields and major roads.

TPC—Tactical Pilotage Chart

This is an air navigation chart at 1:500,000 scale. It has worldwide coverage. This product has almost no topographic features except airfields and major roads.

JOGA—Joint Operations Graphic (Air)

This is an air navigation chart at 1:250,000 scale. Two discontinued products are JOG ground and JOG combined. JOGA has about 90% of the ground coverage, but some of the coverage is in picto-map format. This product has about 60% of major bridges most airfields, most major towers, some power stations, and almost no buildings. Most feature locations are off by several hundred feet.

TLM 1:100,000—Topographic Line Map 1:100,000 Scale

This is a map designed for helicopter and mechanized operations. The coverage is probably on the order of 20% of the land surface. This product has most bridges, airfields, towers, and power stations, and some buildings, except in areas with urban tint. Most feature locations are within 200 m.

TLM 1:50,000—Topographic Line Map 1:50,000 Scale

This is a map designed for infantry operations. It is the preferred coverage by standard combat troops and is the one map-reading is taught on. The coverage is probably on the order of 50% of the land surface. This product has most bridges, airfields, towers, and power stations, and some buildings, except in areas with urban tint. The fidelity is a little bit better than the 1:100,000 TLM. Most feature locations are within 100 m.

TLM 1:25,000—Topographic Line Map 1:25,000 Scale

This is a map designed for light infantry operations. The coverage is probably on the order of 5% of the land surface. This product has most bridges, airfields, towers, and power stations, and some buildings, except in areas with urban tint. The fidelity is a little bit better than the 1:50,000 TLM. Most feature locations are within 50 m.

City Graphic

This is a map for urban operations. The scales vary between 1:5000 and 1:25,000. The coverage is for most medium and large cities outside the United States. This product will have significant and isolated buildings on it, but it will also have many areas of urban tint. Most feature locations should be more accurate than 1:25,000 TLM.

APPENDIX B—CANDIDATE TRAINING COMMUNITY APPLICATIONS

TRAINING OBJECTIVES PLANNING APPLICATION

The exercise designer uses the Training Objectives Planning Application to identify training objectives and Universal Joint Task List (UJTL) training tasks.

- **Thresholds:**
  - Transfer and use training plans, mission essential task lists, training objectives, scenarios, and training audience data from the Joint Training Information Management System (JTIMS).
  - Identify scenarios that best create the stimuli (conditions) for the training audience to demonstrate proficiency in the selected UJTL tasks.
  - List previously created scenarios.
- **Objectives:**
  - Allow collaborative planning. Planners in outlying sites must be able to conduct collaborative planning with the host planner using their existing C4I systems and the Internet to link with host. There shall not be a need for specialized hardware at planner locations.
  - Contain a Master Scenario Events List (MSEL) development tool or link to JTIMS MSEL development tool.
  - Interface with the Data Collection Application of the JTIMS program or to some other application if not in JTIMS.

EXERCISE SCENARIO COMPOSITION APPLICATION

The exercise scenario composition application allows the planner to compose an exercise. It contains applications that allow the planner to create the exercise participant and force lists for the simulation, position the forces and objects at their STARTEX (start of exercise) locations, plan the initial missions for the forces not controlled by the training audience, create the exercise location (play box) and environmental conditions, and develop a data-collection plan for the exercise. Components include the following:

Task Organization Editor Tool

This tool allows the exercise designer to choose and create the exercise forces. The application uses the large amount of task organization and equipment data extracted from standardized databases to provide the user with a pallet of Table of Organization and Equipment (TOE) options to specify the exercise order of battle force structure.

- **Thresholds:**
  - Use the training objectives and UJTL tasks data incorporated via the Exercise Objectives Planning Application to identify the minimum size and fidelity of exercise force structure needed to provide the appropriate stimuli to the training audience to accomplish the stated training objectives and tasks.
  - Extract force structure data from the following standard databases:
    - Extract Unit Order of Battle/TOE data from Army TOE files to support order-of-battle scenario generation. TOE files contain unit capabilities, unit names, personnel authorizations, equipment authorizations, and senior/subordinate units. This information, needed for Army scenario generation, goes down to the squad level and is listed by a unit identification code (UIC).
    - Extract Unit Order of Battle/TOE data from Conventional Forces Database (CFDB) files to support order-of-battle scenario generation. The CFDB contains unit names, unit capabilities, unit locations, personnel authorizations, equipment authorizations, and senior/subordinate units. This information is needed for all Services (less the Coast Guard) to the company level and is listed by a UIC. The Army TOE files contain more detailed and up-to-date information than the CFDB and would therefore normally be used if available.
    - Extract Unit Order of Battle/TOE data from Modern Integrated Database (MIDB) files to support order-of-battle scenario generation. The MIDB contains unit capabilities, unit names, unit locations, personnel authorizations, equipment authorizations, and senior/subordinate units for all forces (except U.S.) down to the battalion level. This information is needed for non-U.S. force generation and is listed by a UIC.
    - Extract Unit Order of Battle/TOE data from Type Unit Characteristic (TUCHA) files to support order-of-battle scenario generation. The TUCHA files contain unit capabilities, personnel authorizations, equipment authorizations, and senior/subordinate units. This information is needed for all Services (less the Coast

Guard) to the company level. This is important as a complete list of units in an unclassified format.

- Extract Unit Order of Battle/TOE data from Conventional Forces Europe Database (CFE) files to support order-of-battle scenario generation. The CFE contains unit capabilities, unit names, unit locations, personnel authorizations, equipment authorizations, and senior/subordinate units for units based out of Europe, is unclassified, and is listed by a UIC.
- Extract Target/Intelligence/BE Numbers from MIDB files to support order of battle, SNE, and CE scenario generation. The MIDB will provide location, facility type, facility code, equipment, allegiance, and BE Number.

– Contain joint and Service organizations, task organizations, and force list templates. It must allow the planner to build a force list for the exercise by selecting generic units from a menu.

– Allow the planner to extract units from a simulation database and have the unit files contain all organic personnel and equipment assets belonging to that generic type unit.

– Allow the planner to tailor the organizations through task organizing in accordance with the training audience's operational plans.

– Allow the planner to modify task organizations during the exercise to accommodate the training audience's changing operational plans.

– Allow planner to set equipment and supply levels at STARTEX and adjust them during the exercise.

- **Objectives:**

– Extract data from the following standard databases:

- Extract unit order-of-battle/TOE data from unit readiness files to support order-of-battle scenario generation.
- Extract unit order-of-battle/TOE data from FORSGEN files to support order-of-battle scenario generation. The FORSGEN database contains unit capabilities, unit names, personnel authorizations, equipment authorizations, and senior/subordinate units for units in the future and is listed by a UIC.
- Extract unit order-of-battle/TOE data from FORSGEN OPFOR files to support order-of-battle scenario generation. The FORSGEN OPFOR database contains unit capabilities, unit names, personnel authorizations, equipment authorizations, and senior/subordinate

units for OPFOR units; it is unclassified; it is the basis for the current OPFOR for major CBS exercises, and it is listed by a UIC.

- Allow collaborative planning.
- Allow the analyst to identify high interest units that can be tracked in the simulation.

Subordinate Unit Generation Tool

This application is required to build the subordinate command structure detail that spans the gap between the above authoritative data sources and simulation scenario-generation needs. Some of the data in the authoritative sources are not at the appropriate echelon of detail (platoon) to meet the simulation's scenario-development requirements. This application shall take information from the authoritative data source and, with minimal developer input, generate subordinate task organization down to the platoon level.

- **Thresholds:**
  - Allow the designer to choose a unit to subordinate.
  - Allow the designer to specify the number and type of subordinate units.
  - Allow the designer to specify identical subordinates.
  - Automatically generate default names for the subordinate units based on the parent unit name and a prefix of HQ (1st, 2nd, 3rd, etc.)
  - Allow the designer to edit subordinate unit names.
  - Automatically populate the HQ element with all the equipment from the parent.
  - Allow the operator to select the equipment/personnel to be decremented from the HQ element and moved to the subordinate line units.
  - Automatically populate all identical units and decrement the HQ appropriately.
- **Objectives:**
  - Automatically search existing scenario databases for subordinate unit hierarchies below that contained in the authoritative database.
  - Allow the designer to select and insert a subordinate unit hierarchy from existing databases.

Force Lay Down Tool

The Force Lay Down Tool creates the initial conditions for all forces (both combat and support) in the simulation and places them on the terrain in a doctrinally correct fashion for STARTEX. It will also populate the simulation with noncombatant groups (e.g., refugees, commercial traffic, etc) in accordance with the exercise scenario.

- **Thresholds:**
  - Contain doctrinal templates for each type of unit in administrative and tactical formations.
  - Allow the planner to modify templates to accommodate the actual terrain or a training objective (such as in the case of the OPFOR).
  - Use data from the Exercise Objectives Application to identify exercise location.
  - Use data from the Task Organization Editor Tool to identify order-of-battle.
  - Use data extracted from standard databases by the Task Organization Editor Tool to initially position units on the battlefield.
  - Use doctrinal templates to position forces derived from Subordinate Unit Generator Application.
  - Allow the planner to click and drag the unit into position for STARTEX.
  - Allow the controller to click and drag units into position during exercise execution.
  - Allow planner to position obstacles and structures made by the specified units for the STARTEX situation.
  - Allow the controller to reposition obstacles and structures made by the specified units during exercise execution.
- **Objectives:**
  - Allow collaborative planning.
  - Link to GCCS (or its follow-on system within the JC2 concept) and read into model unit locations as defined in unit plans before STARTEX.

Mission Planner Tool

The Mission Planner Tool gives the exercise-control group the ability to create missions and routes for the forces in the exercise.

- **Thresholds:**
  - Allow the exercise controller to issue orders to all MSO elements within the simulation.
  - Provide the exercise controller with templates for all 214 USMTF formats contained in the Information Exchange Requirements (IER) matrix.
  - Allow the exercise controller to track the status of the units being controlled.
  - Be able to read and execute an ATO and ACO generated by the JFACC/AFFOR MSO or TRANSCOM MSO, or from the Training Audience via RTI and/or TBMCS.
- **Objectives:**
  - Be able to read orders and execute them without human interface.
  - Allow the planner to specify what reports (and formats) and what frequency of reports are required and then have the application provide those reports during exercise.
  - Be able to visually display the Air Control Order (ACO) (airspace structure for routes, orbits, CAP, no-fly zones, MEZs, and FEZs).
  - Support mission analysis and course of action development and comparison.

Environment Creation Tool

The Environment Creation Tool combines the functions of numerous environmental applications used to select the terrain database and create the initial weather and sea state for the exercise. Generating the environmental databases (especially the terrain database) is a time-consuming and expensive process. The simulation uses the Synthetic Environment Data Representation and Interchange Specification (SEDRIS) data-interchange technology to create and maintain a consistent view of the synthetic environment. Note: This application shall either be or be comparable to the Defense Modeling and Simulation Office (DMSO)-developed Weather Scenario Generation Application.

- **Thresholds:**
  - Allow planner to define the exercise location in a manner similar to that used in GCCS (or its follow-on system within the JC2 concept) to define a specific area to monitor.

- Once the planner has defined the exercise location, automatically pull down actual terrain data from a repository to establish the specific exercise area.
- Allow a planner to preset the weather and climatic conditions for an exercise and run those conditions over time during an exercise.
- Allow planner to manipulate the data before or during an event.
- Link to JTIMS for information from the Joint Training Plan for scenario and location.
- Allow the planners and controllers to either set the time zone in the scenario exercise area to real time or to exercise-site local time. The simulation shall also allow for times when the local time and time in the specific exercise area are not the same.
- Allow the planner to identify and generate the exercise location using simulated terrain data.
- Provide weather reports representing weather conditions and forecasts so that a Joint Exercise Control Group (JECG) role player can provide reports to the METOC (weather officer) in the training audience.

- **Objectives:**
  - Alert the control group when conditions have been established that adversely affect a particular key element of the training audience.
  - Accept direct feeds from real-world weather sources and incorporate that information directly into the simulation.
  - Link to the Master Environment Library (MEL) to obtain historical environmental data.

Data Collection Management Tool

The Data Collection Management Tool automates data-collection planning and the management of data collection during run time.

- **Thresholds:**
  - Link to the Training Objectives Planner Application.
  - Link to JTIMS tasks, conditions, and standards for the training objectives.
  - Link to a MSEL development application, such as found in JTIMS.
  - Link to the Collection Management Plan in JTIMS.
  - Allow the analyst to manipulate UJTL standards established by the Training Objectives Planner Application and JTIMS.

- Allow the analyst to link MSEL events to training objectives and tasks.
- Allow the analyst to link simulation events to training objectives and tasks.
- Allow the analyst to select specific data (messages, MSEL, UJTL-related conditions and standards) for the simulation to collect, compile, report, and display at predetermined times or before or after predetermined events.
- Allow the observers and analysts to enter significant information relative to the training event.
- Allow analyst to specify an area, period of time, or set of simulation or training audience elements to collect data against.
- Allow the analyst to preset AAR briefing or analyst tracking slide formats and templates.
- Provide the analyst with selected slides at specified time intervals during exercise execution.
- Allow the analyst to modify data-collection efforts during exercise execution.
- Allow the analyst to compare training audience perceived truth with ground truth.
- Allow the analyst to search for information based on message types, titles, and keywords (i.e., OPORD, Warning Order, DCA, TMD).

• **Objectives:**

- Automate the production of a data-collection plan.
- Automatically collect simulation data based on selected UJTL task, conditions, and standards from the Training Objectives Planner Application.
- Automatically plot simulation data based on templates associated with selected UJTL task, conditions, and standards.
- Prepare the After Action Report (AAR) with associated Joint After Action Reporting System reports.
- Transfer designated observer/trainer observations into lessons learned.

Exercise Raster Graphic Generation Tool

The Exercise Raster Graphic Generation Tool takes the CCWS screen background and puts it into a format that can be read by machines that use ADRG (arc digitized raster graphics) or CADRG (compressed arc digitized raster graphics). This tool would give

users the ability to export the map background from CCWS to C4I devices that read those formats. This is very important in the development and use of fictional land masses.

- **Thresholds:**
  - Generate ADRG files of the CCWS screen background.
  - Generate CADRG files of the CCWS screen background.
- **Objectives:**
  - Generate files for use on plotters to produce hard-copy maps identical to the CCWS screen background.

EXERCISE SCENARIO/INFRASTRUCTURE ANALYSIS APPLICATION

The Exercise Scenario/Infrastructure Analysis Application (S/IAA) allows the planner to analyze the scenario and the infrastructure to determine supportability. It provides a simulation of the simulation that assists the exercise designer in allocating resources to an exercise composition.

- **Thresholds:**
  - Allow the user to run a quick simulation of the scenario (at an abstract level) to help in refining the scenario concept in short time periods and in AAR and data-collection planning.
  - Identify “lulls” in the action to aid in AAR scheduling.
  - Run 10 to 100 times faster than real time.
  - Support multiresolution modeling such that the user can examine scenario in rough form, then refine if it appears suitable.
  - Analyze the model-to-host-to-network mapping to determine where overloads may occur during the exercise.
  - Test training objectives to measure the level and phasing of training audience loads.
  - Present a statistical characterization of the behavior of the simulation system as it is relevant to exercise reliability, availability, and maintainability objectives.
- **Objectives:**
  - Link to a MSEL development application, such as found in JTIMS.
  - Identify extent of infrastructure required to run an exercise.
  - Confirm system configuration.
  - Identify bandwidth and workstation requirements for the exercise.

- Allow analysts to enter a training audience's plan into the application and then run the plan at fast-forward speed to analyze the plan and identify key areas for observation and analysis. SIAA must also allow the analyst to compare the fast-forward data with the training audience's actual performance data after execution.

EXERCISE INITIALIZATION APPLICATION

The Exercise Initialization Application allows the user to perform the initialization bootstrapping of the simulation execution, before handing control off to the exercise manager. This application prepares the simulation entities and simulation applications for STARTEX, giving them all the information they need to begin a simulation execution.

- **Thresholds:**
  - Load software.
  - Prepare entities for exercise execution.
- **Objectives:**
  - Same as thresholds.

INFRASTRUCTURE MANAGER APPLICATION

The Infrastructure Manager Application monitors and controls the RTI via the federation management commands and the management object mod.

- **Thresholds:**
  - Monitor and track the operation status of the run time interface (RTI) between the model components.
  - Visually display which components are running on-time and which are catching up.
  - Visually display throughput status (status, message, and order counts) of the RTI and track "up-time."
  - Be able to monitor activity on all networks, simulation hosts, and workstations.
- **Objective:**
  - Control and adjust CPU and node workloads based on preset maximums.

PERFORMANCE PREDICTOR APPLICATION

This application performs a simulation of the simulation that is used for performance prediction. This software component has significant pieces reused from the Scenario Analysis Application/Infrastructure Analysis Application.

- **Thresholds:**
  - Predict whether or not the exercise network topology and node configuration are sufficient to handle the exercise load.
  - Predict the reliability, availability, and maintainability of the simulation based on available exercise bandwidth and hardware.
  - Predict expected model response time and network bottlenecks.
  - Identify infrastructure required to run an exercise at a given reliability, availability, maintainability.
  - Run faster than real time.
  - Analyze process and workload to identify node and host lulls and overloads.
- **Objective:**
  - Confirm system configuration.

NETWORK MANAGER APPLICATION

This application is used to control and monitor the network.

- **Thresholds:**
  - Manage all aspects of the network during exercise execution from either a single location or from multiple distributed locations.
  - Control, monitor, and troubleshoot network configurations.
  - Controlling shall include the ability to define initial exercise network topology with redundancy and performance thresholds, manipulate network configurations during execution with no impact to the users, stop or break and start or re-initiate network connections, etc.
  - Monitoring shall include the ability to determine network or hardware bottlenecks or problems.
  - Track network performance at specified intervals for a defined period of time.
- **Objectives:**
  - Define the exercise network configuration (routing, protocols, bandwidth, etc.), hardware and software distribution and configuration

of simulation components, and minimum and maximum thresholds for performance expectations of the network.

OBJECT/INTERACTION EDITOR/MONITOR APPLICATION

This application is used to examine any entity in the exercise, display its value, and alter the value, if necessary.

- **Thresholds:**
  - Be password protected.
  - Allow the controller to examine/review an entity and alter values to meet event objectives.
- **Objectives:**
  - Track all entities that have functional values outside the accepted performance standards.

QUERY MANAGER APPLICATION

This application is used to access the data stored in the simulation database.

- **Thresholds:**
  - Access and change data and parameters to meet event objectives.
  - Access and compile data during simulation execution.
- **Objectives:**
  - The threshold defines the objective.

ENVIRONMENT MANAGER APPLICATION

This application is used to monitor and control the Synthetic Natural Environment.

- **Thresholds:**
  - Be password protected.
  - Allow the controller to change the conditions of the environment and the outcome of interactions.
- **Objectives:**
  - The threshold defines the objective.

3D DISPLAY APPLICATION

This application is used to render the virtual world in three dimensions.

- **Threshold:**
  - Allow the controllers and analysts to view the simulation in three dimensions.
  - Allow three-dimensional replay for after action review.
  - Isolate data streams so that any combination can be reviewed on the monitor.
- **Objectives:**
  - Allow replay of past events while the simulation is executing current events.

PLAN VIEW DISPLAY APPLICATION

This application is used to produce a map display of the virtual world.

- **Thresholds:**
  - Allow the controllers and analysts to display the virtual world.
  - Provide functions of the Graphical Input Aggregate Control (GIAC) tool in the Joint Theater Level Simulation (JTLS).
  - Incorporate the standard terrain-control protocols (pan, zoom, select representative scale).
  - Incorporate the standard symbol-control protocols.
  - Standard NTDS symbology using both shape and color.
  - Point-and-click icon data windows (click on the icon and the window opens, providing information).
  - Isolation of certain symbols (blink, bold, turn off/on, etc., like a GIAC).
  - Operator-selected memory system for operator setup.
- **Objectives**
  - Capable of storing and retrieving 10 or more views/levels of aggregation.

EXERCISE EVALUATION APPLICATION

The application aids the exercise analysts in presenting the collected and analyzed information in a way that facilitates learning by the training audience. They are also used to conduct analysis and review during an exercise and to produce AAR and take-home packages for the training audience.

Report Generator Tool

- **Thresholds:**
  - Generate Joint After Action Reporting System (JAARS) reports, in JAARS format, from the observations provided by the observer/trainers and analysts during the exercise.
  - Generate a Commander's Summary Report in the format required by the Joint Training Manual.
  - Generate an After Action Report in the format required by JAARS.
  - Provide visual and graphical reports to support the Facilitated After-Action Reviews during and after an exercise. The content and format shall be tailorable to the needs of the training audience and facilitator.
  - Provide take-home packages for the training audience based on the format and content specified by the analysts. It will be able to sort observations by training and exercise objectives.
  - Be able to provide collected and analyzed data in the formats and frequency specified by the analysts.
- **Objectives:**
  - Interface with the Exercise Planning Application to identify JMETL and reports needed for each JMETL.
  - Interface with the Data Collection Management Tool to identify availability and reports fields available for each JMETL.

Map Display Viewer Tool

- **Thresholds:**
  - Display the simulation "ground truth" data, such as unit and platform locations, platform tracks, status of equipment and supplies, unit strength, etc.
  - Display training audience "perceived truth" of unit and platform locations, platform tracks, and status of equipment and supplies, unit strength, etc.
- **Objectives:**
  - Allow aggregation up to Corps and deaggregation down to squad level.
  - Be able to zoom to 100 square meter area.

3D VIEWER TOOL

- **Thresholds:**

- Objective-only tool.

- **Objectives:**
  - Display the battle space in three dimensions.
  - Allow the analyst to specify a specific area to collect against and analyze and then display that area in three dimensions with the specified data and entities displayed.
  - Have the same capabilities of the present GIAC system.
  - Have same capabilities as the 3D Display Application in the Exercise Execution Phase (same application).

PLAYBACK ENGINE TOOL

- **Thresholds:**
  - Allow the analyst to identify specific periods of time or events and then play back that data.
  - Be able to play back selected data at normal speed, slow speed, or fast speed.
  - Be able to play back simulation data and the data displayed to the training audience members on their C4I systems.

- **Objectives:**
  - Be able to show all capabilities of the Map Display Viewer Tool.
  - Be able to show all capabilities of the 3D Viewer Tool.

EXERCISE ARCHIVING APPLICATION

This application is used to prepare subsets of exercise data for archiving in a common simulation resource repository (or repositories) and associated databases such as the Joint After Action Reporting System (JAARS) databases.

- **Thresholds:**
  - Format and archive data selected by the analyst.
  - Interface with a simulation common resource repository (or repositories).
  - Have template formats for archival data such as scenario data, force list/training audience data, AAR data, JAARS data, training/exercise objectives data, and exercise-related operational plans (Exercise Directive, Control Plan, Data Collection Plan, Simulation Plan, Operations Orders, TPFDD, etc).

- **Objectives.**
  - Same as threshold.

APPENDIX C—ESSENTIAL FUNCTIONS AND FAILURE MODES

ESSENTIAL FUNCTIONS

The simulation system must create the environment to allow commanders and their staffs to conduct the doctrinal battle space procedures in an interactive mode with the simulation. The simulation system must provide the following essential functions:

- **Simulate Military Operations.** The simulation system must represent the mobilization, deployment, operational, sustainment, and redeployment environments of all Services and the joint arena.
- **Stimulate Military Operations.** The simulation system must receive inputs of combat orders, requests for unit actions and status, and other information flow. The simulation system must process the outcomes of those inputs and provide feedback to the users regarding outcome. The simulation system must stimulate and interface with the training unit's command, control, computer, intelligence, reconnaissance, and surveillance (C4ISR) devices with the appropriate voice, video, or data. The simulation system must ensure that the appropriate classification of information is shared throughout the simulation, in a multiple security level (MSL) exercise.
- **Support Scenario Generation.** The simulation system must have automated tools that build terrain, target, and unit order-of-battle databases. The simulation system must connect with and extract real-world information from DTED, VMAP, CFDB, MIDB, and TOE authoritative databases and build exercise-specific scenarios. Scenario generation will be tested as go/no go prior to simulation execution.
- **Support Checkpoint, Restart, and Catch-up.** The simulation system must have automated tools that allow the exercise controllers to accomplish periodic saves (checkpoints) of the state of the entire simulation. In the event of a system abort or essential function failure, the simulation system must have automated tools that allow exercise controllers to restart the simulation from the desired checkpoint. These tools would also allow controllers to use a history file of controller or training audience inputs/orders (including automatic reset of C4I systems if allowed by the C4I device) to rerun simulation events at a 4:1 ratio (minimum) or higher until the simulation catches up with wall clock time. Checkpoint, restart, and runup will be tested as go/no go prior to simulation execution.

- **Synchronize the Simulation Environment.** The simulation system must maintain event synchronization across all federates, workstations, and C4ISR interfaces within the system.
- **Provide Network Management.** The simulation system must provide exercise control throughout the simulation network (hard-wired or wireless) to include system monitoring, fault detection, remote software adjustment and repair (from the technical control station in the Battle Simulation Center or Regional Training Center), and automatic reconfiguration. This includes control of multiple training events that may be occurring simultaneously.
- **Support After Action Reviews (AARs).** The simulation system must gather data from the simulation and from command posts of the training units, analyze that data, and deliver audiovisual output to support the conduct of AARs during and upon completion of the training event.
- **Reliability, Availability, and Maintainability (RAM) Attributes**
  - **Reliability:**
    - The simulation system shall have a mean time between essential function failure (MTBEFF) of at least 490 hours and a mean time between system abort (MTBSA) of at least 980 hours.
  - **Maintainability:**
    - The simulation system's total administrative and logistics downtime (ALDT) for an essential function failure shall not exceed 30 hours per occurrence on an estimated annual training usage of 4,800 hours at each regional training center (RTC). The simulation system's mean time to restore (MTTR) after an essential function failure shall not exceed 1 hour.
    - The simulation system total administrative and logistics downtime (ALDT) for a system abort shall not exceed 40 hours per occurrence on an estimated annual training usage of 4,800 hours at each RTC. The simulation system mean time to restore (MTTR) after a system abort shall not exceed 9 hours.
  - **Availability:**
    - The simulation system (full federate architecture) shall have an operational availability of at least 95% during a 14-day, 24 hour/day computer-assisted event.
    - The mean time between essential function failure (MTBEFF) shall be at least 490 hours.
    - The mean time between system abort (MTBSA) shall be at least 980 hours.

- The total administrative and logistics downtime (ALDT) for an essential function failure shall not exceed 30 hours per occurrence on an estimated annual training usage of 4,800 hours at each regional training center (RTC).
- The simulation system mean time to restore (MTTR) after an essential function failure shall not exceed 1 hour.
- The total administrative and logistics downtime (ALDT) for a system abort shall not exceed 40 hours per occurrence on an estimated annual training usage of 4,800 hours at each regional training center (RTC).
- The simulation system mean time to restore (MTTR) after a system abort shall not exceed 9 hours.
- The simulation system (full federate architecture) shall have an operational availability of at least 95% during a 14-day, 24 hour/day computer-assisted event.
- The reliability of any component of the simulation system shall be such that it does not degrade the reliability of any other component of the simulation system.
- In the event of an essential function failure, the remaining components of the system shall continue operating at technical control designated speeds, with the system continuing to process data.

FAILURE DEFINITIONS

- **System Abort:**
  - An event resulting in loss or degradation of an essential function, which renders the system unable to enter service or causes immediate removal from service. A system abort prevents the system from being mission capable, resulting in a "not mission capable" status. For the future simulation system, a system abort occurs when, for any reason, the federation must be rebooted/reinitialized.
- **Essential Function Failure:**
  - A failure or malfunction causing degradation below an established level or causing complete loss of an essential function. For the future simulation system, an essential function failure occurs when, for any reason, a federate, library, or service in the federation must be rebooted/reinitialized or causes the federation to fall more than 30 minutes behind wall clock time. If any of the primary federates, libraries, or services produce such a failure, it is counted as an essential function failure.

APPENDIX D—ADDITIONAL TABLES FOR THE DATA CALL AND THE DATA CALL ANALYSIS

INSTRUCTIONS FOR THE TRAINING M&S BUSINESS PLAN DATA CALL

In support of Training Transformation and the M&S Training Community, OUSD (Personnel & Readiness) is preparing recommendations for DoD investments to be made through the Modeling and Simulation Coordination Office (M&S CO) in modeling and simulation capabilities needed to meet joint training requirements.

The 35 Training M&S requirements (or 'gaps') identified for this purpose were developed by COCOM, Service, and Joint Staff representatives as part of the 2004 Training Capabilities Analysis of Alternatives (TC AoA). These recommendations will be included in the Training Modeling and Simulation Business Plan.

A copy of the TC AoA can be viewed through the T2 Forum Web site: http://www.t2net.org/forums/messageview.aspx?catid=92&threadid=1031&enterthread=y#top under the Joint Assessment and Enabling Capability folder.

Much has occurred since the TC AoA was conducted. Before making investment recommendations, we need to know what modeling and simulation capabilities for joint training now exist or will emerge before the end of FY 2008. More specifically, this data call is intended to reflect current capabilities (available by the end of FY08) of each federation/simulation against the COCOM TC AoA requirements to determine: (1) the extent to which it meets each of the 35 requirements and for what training audience(s); (2) what capabilities or enhancements in the federation/simulation can meet each requirement in part or in whole; (3) what shortfalls remain and prevent the requirement from being met; (4) what solutions are being developed or might be developed to address these shortfall(s); and (5) any comments that might be needed to amplify or explain responses to issues (1) - (4) or suggestions for furthering this effort.

Each organization has its own workbook with at least three worksheets. Please complete each worksheet as described below. These instructions are embedded within the worksheets and as comments accessible by red, triangular Excel comment indicators.

The worksheets include questions on M&S federations used in joint and Service training events ('Gap Analysis'), the relationship between the federates and tools within

the federation ('M&S Analysis'), and an outline for a brief description of the federates ('M&S Data Sheet'). The worksheets can be modified to include federates and tools that were not included and comments are encouraged to provide additional details or explanations that may not fit elsewhere.

The breakdown of workbooks and worksheets includes:

1) Joint:
    a) JLVC Federation Gap Analysis
    b) JMRM Federation Gap Analysis
    c) JLVC M&S Analysis
    d) JMRM M&S Analysis
    e) M&S Data Sheet
2) Army
    a) JLCCTC Federation Gap Analysis-MRF
    b) JLCCTC Federation Gap Analysis-ERF
    c) MRF M&S Analysis
    d) ERF M&S Analysis
    e) M&S Data Sheet
3) Navy
    a) NCTE Federation Gap Analysis
    b) NCTE M&S Analysis
    c) M&S Data Sheet
4) USAF
    a) ACE Federation Gap Analysis
    b) ACE M&S Analysis
    c) M&S Data Sheet
5) USMC
    a) USMC Federation/M&S Gap Analysis*
    b) USMC M&S Analysis

* The use of federations is limited in the USMC and IC. Instead of a federation, it may be more appropriate to evaluate each M&S against the TC AoA gaps.

c) M&S Data Sheet

6) Intelligence Community (IC)

a) IC Federation/M&S Gap Analysis*

b) IC M&S Analysis

c) M&S Data Sheet

These federations were selected because (a) they may be used for joint training, (b) they may help fill one or more of the training gaps, or needs, identified by a COCOM panel for the 2004 Training Community Analysis of Alternatives (TC AoA), and (c) they will be in use or available for use by the end of FY08. Please tell us if there are other federations that should be considered here.

FEDERATION GAP ANALYSIS WORKSHEET

Col A. Gap: Reference Number of the joint training requirement, or 'gap', identified by a COCOM panel for the 2004 TC AoA. The gaps are listed in the order of priority assigned in 2004. Most probably, some of these priorities will have changed since then.

Col B. Description: Brief descriptions of each gap identified for the 2004 TC AoA. There are 35 gaps in all. More detailed descriptions of gaps 1-30 are provided in Table D-1, which follows these instructions. Descriptions for each gap are also accessible via the comment indicator in the upper right hand corner of description box.

Col C. Training Tier(s) Supported: If the federation addressed in the worksheet *does not* contribute to filling the COCOM training gap in a row, then no further information is required for this gap and this row.

If the federation addressed by the spread-sheet does contribute to filling the COCOM training gap in a row then please indicate to which one or more training audience tier(s) the federation applies. Please do this by signifying with an H (for highly, or strongly, applies), M (for moderately applies), L (for low or slightly applies), or N (for not applicable) to indicate to which training tier(s) the federation may apply.

A description of the five training audiences (TA) follows:

TA 1: Regional COCOM or Multi-COCOM (Strategic and Operational)

TA 2: JTF (Operational)

TA 3: Service Component (Operational)

TA 4: Service (Tactical)

TA 5: Crew/Individual (Tactical)

For instance you might enter T1(M), T2(H), T3(H), T4(L), and T5(N) for a federation that could fill the COCOM training gap in this row -- *moderately* for Tier 1 training audiences, *strongly* for Tier 2 and 3 training audiences, *slightly* for Tier 4 training audiences, and *no applicability* for training Tier 5 audiences.

We recognize that the judgments we request here are, to one degree or another, subjective. That is why we have sought the professional judgments of M&S experts to complete these spread-sheets.

Col D. Major Enhancements: What development(s) or enhancement(s) to the federation have been made that support the COCOM training gap listed in this row. This includes Service capabilities that support a joint capability.

Col E. Shortfall: What technical issue(s) remain to be addressed or capability needs to be developed before the COCOM training gap in this row will be filled?

Col F. Solution: What, if anything, is being done to address the shortfall(s) identified in Col E of this row?

Col G. Comments: Please provide any amplifying comments, explanations or other information that may be needed here.

M&S ANALYSIS WORKSHEET

Col A. Gap: Reference Number of the joint training requirement, or 'gap', identified by a COCOM panel for the 2004 TC AoA. The gaps are listed in the order of priority assigned in 2004. Most probably, some of these priorities will have changed since then.

Col B. Description: Brief descriptions of each gap identified for the 2004 TC AoA. There are 35 gaps in all. More detailed descriptions of gaps 1-30 are provided in Table D-1, which follows these instructions. Descriptions for each gap are also accessible via the comment indicator in the upper right hand corner of description box.

Col C. Model/Tools: List of the federates/tools that make up the federation/M&S toolkit. Intent is to identify what federates/tools provide the primary capability that fills that gap and what federates/tools support filling the gap to a lesser degree. The federate that provides the bulk of the information needed would be a Primary federate and the federates that utilize that information would be Secondary federates.

P: Primary

S: Secondary

Col X. Comments: Please provide any amplifying comments, explanations or other information that may be needed here.

M&S DATA WORKSHEET

The purpose of this worksheet is to obtain a brief description of the federate or tool, the commercial developer, and government sponsor. This information will be kept as a repository of information obtained during the data call.

DESCRIPTIONS OF THE 2004 TC AOA JOINT TRAINING GAPS

1. Train Combined Joint Task Force (CJTF) Staffs (Includes Need for Individual Joint Training)

Develop an environment that allows for CJTF training centered on joint and coalition/multinational doctrine and procedures including:

- Policies, processes and procedures for Joint Manning Document (JMD) maintenance:
  - Initial stand up of the organization and
  - Replacement of trained and experienced members.
- JTF staff information management:
  - Organizing, collecting, and processing of Commander's Critical Information Requirements (CCIRs);
  - Formation and management of boards, bureaus, centers, and cells that translate information into knowledge; and
  - Integration and use of Information Technology (IT) systems that enable data collection and information processing.
- Rehearsal of:
  - Individual and team job skills,
  - Collective staff Command and Control tasks, and
  - Component command staffs planning and executing operational mission requirements.

2. Train Standing Joint Force Headquarters Staff (SJFHQ) (Includes Need for Individual Joint Training)

Develop an environment that allows replication of the COCOM, Service Component and SJFHQ staff processes, procedures, and materiel capabilities to support implementation of each of the three SJFHQ employment options:

- SJFHQ employment as a mission headquarters;
- SJFHQ integration of personnel, processes, and materiel into the force structure of a Service Component HQ to execute the mission from a JTF organization structure; and
- SJFHQ operation from COCOM HQs to support forward-deployed Service Component/JTF HQs. SJFHQ training should include:
  - Joint C4ISR integration planning, policies and procedures;
  - SJFHQ and JTF staff information management planning, policies and procedures including organizing, collecting, and processing CCIRs;
  - Formation and management of boards, bureaus, and centers that translate information into knowledge; and
  - Integration and use of Information Technology (IT) systems that enable data collection and information processing.

3. Train for Crisis Action Planning (CAP) and Associated Deployments

Develop an environment for Crisis Action Planning training that provides for:

- Developing an understanding of and proficiency in the execution of the CAP process;
- Communicating CAP products to appropriate entities; and
- Applying established collaborative planning technologies. Deployment training related to Crisis Action Planning should center on processes and procedures for developing and executing a Time-Phased Force Deployment Data List (TPFDDL) and/or Request for Forces (RFF) documents.

4. Provide Faster/Higher-Fidelity Mission Rehearsal

Develop an environment that allows for training:

- Based on the Joint Requirements Oversight Council (JROC) approved Range of Military Operations (ROMO);
- Specified by the OPLAN/OPORD for which the mission rehearsal is required;
- Identifying the portion of the plan for rehearsal; and

- Selecting appropriate rehearsal techniques for staffs and organizations.

Training should:

- Incorporate approved individual and unit joint training standards;
- Schedule the training support resources (e.g., observer/trainers, models/simulation, and ranges/maneuver areas);
- Establish a "Red Cell" that accurately reflects the political-military approaches, military doctrine, and current capabilities of the belligerent forces;
- Provide an assessment plan to:
  - Determine individual and unit readiness to execute the standards for tasks that support the OPLAN/OPORD;
  - Identify mission capability shortfalls; and
  - Plan and conduct corrective individual and unit training to achieve required standards and minimize mission risk.

5. Train Forces for Joint Urban Operations

Develop an environment where forces can train in urban environments characterized by a concentration of structures, facilities, and population that are the economic, political, and cultural focus of the surrounding area.

Operations may include:

- Civil-Military Operations;
- Strong Media Presence and Public Affairs involvement;
- Interagency Operations;
- Multinational, Coalition, NGO involvement;
- Legal Planning and Oversight Responsibilities; and
- Combat. Training will emphasize the:
- Isolated, nonlinear, compartmented, and vertical nature of operations;
- Psychological effects of close combat;
- Integration of special weapons and special procedures for other weapons employed in close proximity to combatants and noncombatants;
- Unique demands on the logistical system including increased numbers and types of causalities;
- Increased ammunition consumption rates,

- Restricted mobility corridors;
- Warfighting decision demands on the individual and decentralized small unit execution.

6. Train Forces for IO (Including Information Warfare, Computer Network Exploitation CNE, Computer Network Defense CND and Computer Network Attack CNA)

Develop an environment for training of staffs, components and individuals across the range of Information Operations including Information Assurance, Information Warfare and Special Information Operations that comprise:

- Offensive Information Operations including:
  - Operations Security (OPSEC)
  - Deception Operations
  - Psychological Operations (PSYOP)
  - Electronic Warfare (EW)
  - Physical Attack
  - Computer Network Attack
- Defensive Information Operations OPSEC
  - Physical Security
  - Counterdeception
  - Counterpropaganda
  - Counterintelligence Training should stress:
- Planning and coordination between joint headquarters, component staffs, and other US Government departments and agencies required to integrate IO with other portions of operations and campaign plans.
- Deliberate and Crisis Action Planning processes and joint force command operations.
- Understanding processes and developing proficiency in defining, planning, coordinating, and executing IO in a complex operational environment while supporting broader national strategy and objectives.
- Establishment and coordinating roles, policies and procedures for Information Operations Cells at JFC level.

7. Train Forces in a Joint Interagency Intergovernmental, Multinational (JIIM) Environment (Including INTEL)

Develop an environment to conduct Joint Interagency, Intergovernmental, and Multinational training that:

- Provides for the development of an integrated military-interagency (US and international) strategy;
- Establishes integration mechanisms at strategic, operational, and tactical levels to provide leadership, procedures, forum/purpose, and location for conducting interagency coordination;
- Integrates:
  - Department of State and Embassy Country Team political agendas,
  - Manning structure,
  - Procedures
  - Relationships with host and neighboring countries and all appropriate regional and international organizations and activities;
- Develops common approaches for:
  - Military force deployment,
  - Lodgment and employment,
  - Transition/redeployment, and
  - Hand over to local/host government control.

8. Provide Homeland Defense Training

Develop an environment where staffs and components of joint forces and government agencies (Federal, State and local) can conduct training to execute tasks and missions in support of Homeland Defense.

These may include:

- Understanding and Applying:
  - National Homeland Security Policy and Strategy;
  - National Homeland Security Plans;
  - DoD Policy, Strategy, and Plans;
  - Interagency Process and Players (FBI, FEMA, USNORTHCOM, etc.)
- Establishing command and control relationships and support requirements;
- Planning and execution of missions within the confines of legal limits under:

Insurrection;

Posse Comitatus;

Military Support for Civilian Law Enforcement Agencies.

9. Provide Multi-command Ballistic Missile Defense System (BMDS) Training

Provide an environment for training of target audience at three levels:

- Element level (operation and sustainment of the element);
- COCOM level (employment and command oversight of the Ballistic Missile Defense System); and
- National level leadership (high level policy). BMDS training should focus on the following topic areas:
- Threat – Country and regional specific BMD threats, order of battle, and operational procedures;
- Policy and procedures – BMD guidance, planning assumptions, tactics, techniques and procedures;
- Weapons and sensors – Capabilities and limitations, weapons system availability and reliability, and employment considerations;
- Command and control – Command relationships, planning tools, communications modes for planning coordination, C2 systems availability and reliability, situational awareness;
- Sustainment – Maintenance, logistics, mobility, and supportability.

10. Train Forces in Enemy Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) Exploitation and Destruction

Simulate CONUS and OCONUS environments across the range of military operations that replicate adversary CBNRE capabilities and adversary military force structures to plan and employ CBRNE weapons. Support CBRNE exploitation and destruction training for applicable joint staff, combatant command, joint task force, Service component, combat support agency headquarters, and state national guard and reserve forces.

Training should emphasize:

- Integration of US national, international, interagency, joint and Service military intelligence and assessment resources to identify adversary intentions and plans to employ CBRNE weapons.
- Development and execution of integrated military agency plans to interdict, isolate, destroy, or mitigate the effects of CBRNE weapons.

11. Train Forces to Operate in CBRNE Environment

Simulate CONUS and OCONUS environments across the range of military operations that replicate adversary and own force CBNRE capabilities and adversary military force structure to plan and employ CBRNE weapons. Support CBRNE training for applicable joint staff, combatant command, joint task force, Service component, combat support agency headquarters, and state National Guard and reserve forces.

Training should emphasize:

- Integration of US national, international, interagency, joint and Service military intelligence and assessment resources to identify adversary intentions and plans to employ CBRNE weapons.
- Avoidance of CBRNE hazards: contamination, protection of individuals and units from unavoidable CBRNE hazards and decontamination in order to restore operational capability of the force.
- The sustainability, survivability, flexibility, and responsiveness of logistics forces throughout the area of operations.
- Maintenance of the health of essential civilian workforce members supporting military operations, as well as integration of military capabilities with those of the local public health services, including those of host nations, if applicable.

12. Train on Effects-Based Planning and Operations

Simulate a range of environments to train for any of the missions described in the Range of Military Operations (ROMO) from humanitarian relief and peacekeeping operations to enforcement operations and conventional war.

Training should emphasize:

- The processes supported by tools and accomplished by people in organizational settings that focus on planning, executing, and assessing military activities for effects produced rather than attacking targets or dealing with objectives.
- Use of all military, economic, political, and informational resources to change the perception and intentions of a belligerent force.
- A high-level systems perspective and ability to understand, trace, and anticipate direct and indirect effects of a specific action as the effects course through the enemy's political, military, economic, sociological, information and infrastructure.

13. Train Theater/Strategic Forces to Conduct C4I Using Collaborative Information Environment (CIE)

Provide a training environment for combatant command and joint task force headquarters that:

- Facilitates information and knowledge exchange among members of the joint force and its supporting and supported organizations...
  - Across the range of military operations, and is
  - Enabled by high-speed connectivity and electronic collaborative tools.

Training should emphasize:

- Achieving decision superiority by providing commanders and staffs of all participating headquarters the ability to share information and ideas and reduce planning times;
- Integrated technical systems that permit supporting staffs, separated by geography and organizational boundaries, to collectively develop, refine, and direct implementation of plans, and directives;
- Use of the Global Information Grid (GIG) as an information management and dissemination backbone.

14. Train Forces on Realistic Logistics Requirements (Including Reception Staging and Onward Movement Integration)

Develop an environment that enables commands to continually assess plans, policies and procedures; train and integrate lessons learned to improve logistics readiness while employing the three overarching principles combatant commanders consider in Joint Logistics planning and execution including Joint Reception, Staging, Onward Movement, and Integration (JRSOI) operations – Unity of Command, Synchronization and Balance.

- *Unity of command* – Responsibility of the combatant commander of the theater into which the deploying force flows. The combatant commander adjusts resources based on the deployment flow into the theater, controls the movement of forces in the Area of Responsibility (AOR), provides support to personnel arriving into the theater, and centrally coordinates the efforts of key players in the JRSOI process.
- *Synchronization* – When the right units, equipment, supplies, and capabilities arrive in the correct order at the appropriate locations. Supporting activities coordinate so that force deployment tempo, planning, and execution are uninterrupted. Synchronized flow expedites buildup of mission capability

and avoids saturation at nodes and along lines of communication, enhancing survivability.

- *Balance* – Managing the time-phased force and deployment data (TPFDD) flow. Flow through the inter-theater pipeline and the intra-theater distribution network must be regulated and integrated to allow a continuous and controlled flow of forces and supplies. Example – Fourth phase of deployment planning includes JRSOI consisting of:
  - Receiving personnel, supplies, and equipment;
  - Assembling them into units at designated staging sites;
  - Moving these units to a destination within the Joint Operations Area (JOA) or AOR; and
  - Integrating these units into a mission ready joint force.

15. Practice AC/RC Integration and Mobilization Training

Develop an environment that allows RC forces and staff augmentees to integrate effectively into Joint and Service component staffs:

- Policies, processes and procedures to support RC unique training schedules to link with joint/service training opportunities,
- Improve methods for conducting AC/RC integration training (Mobile Training Teams, Distributed Learning, etc.),
- Integrated manpower support structure with visibility from Combatant Command through Service AC/RC units to individuals with joint experience, and
- Incorporate more joint training in RC unit and individual training cycles.

16. Train Forces on Stability and Support Operations (SASO)

Simulate an environment for Military Operations Other Than War (MOOTW) directed at the conduct of stability and support operations (SASO). Stability operations are envisioned to be joint, interagency and multinational operations to provide:

- Security;
- Initial humanitarian assistance;
- Limited governance;
- Restoration of essential public services; and
- Other reconstruction assistance.

17. Train Forces on Military Assistance to Civil Authorities (MACA)

Develop environments for training in the planning and execution of MACA in support of disaster relief (natural and man-made), military assistance for civil disturbances and military assistance to law enforcement agencies within the 50 States, District of Columbia, Commonwealth of Puerto Rico, and U.S. possessions and territories.

Training should emphasize:

- Notification, rehearsal, movement, employment and redeployment of military resources used to assistance to civil authorities as directed by and consistent with applicable law, Presidential Directives, and Executive Orders.
- Appropriate coordination, planning, and immediate action taken by a DoD Component or military commander to save lives, prevent human suffering, or mitigate great property damage under imminently serious conditions
- Assessment of legality, lethality, risk, cost, readiness, and appropriateness for use of specific military resources in a civil environment in support of a federal lead agency.

18. Train Special Operations Forces (SOF) and Conventional Forces for Integrated Operations

Develop a training environment where the joint planning process and execution of these plans integrates and deconflicts maneuver in the battlespace (air, land, sea) for simultaneous operations by SOF and conventional forces.

Training should emphasize:

- Exercising command relationships between the Joint Force Commander (JFC) and the Joint Special Operations Task Force (JSOTF);
- Training the Special Operations Liaison Element (SOLE) to focus on conventional forces coordination processes and how SOF missions can be integrated seamlessly while maintaining the sensitive nature of the missions;
- Exposing JFC staff to the requirements and procedures of the JSOTF;
- Coordination requirements and procedures to accomplish Joint Close Air Support (JCAS) training and mission rehearsal when SOF is used to support conventional forces to complete the close air support “kill chain.”

19. Train Forces (Operational and Tactical level) to Use National Intelligence Systems

Provide training environments that simulate joint staff, combatant command, joint task force, Service component, and combat support agency headquarters and deployment units across the range of military operations supported by access to national-level intelligence systems and products to facilitate execution of assigned tasks and missions.

Training should emphasize:

- Knowledge of requirements and application of capabilities for operations in peacetime that provide national leadership with the information needed to realize national goals and objectives while providing military leadership with the information needed to accomplish missions and implement the national security strategy.
- Develop proficiency for operations in war to identify the adversary's capabilities and centers of gravity, project probable courses of action, and assist in planning friendly force employment.
- Develop proficiency for operations other than war to provide assessments that help the joint force commander decide which forces to deploy; when, how, and where to deploy them; and how to employ them in a manner that accomplishes the mission at lowest human and political cost.

20. Train Routinely with the Joint Operation Planning and Execution System (JOPES)

Develop training that simulates CONUS and OCONUS environments with appropriate information technologies to train joint staff, combatant command, joint task force and Service component staffs in the basic elements of JOPES (publications and documents, the operation planning process and dedicated Information Technology support system) for deliberate planning, adaptive planning, and crisis action planning processes. The goal of the training is to develop required proficiency in the tasks required by JOPES.

Training should emphasize:

- The individual and staff activities required to execute each of the doctrinally approved phases of deliberate planning, adaptive planning, and crisis action planning processes.
- Development of plans (OPLAN, FUNCPLAN, CONPLAN, and TCSP) and execution of OPORDs for each of the JSCP-tasked missions.

- Force, support and transportation planning in the development, refinement, and implementation of Time-Phased Force Deployment Data (TPFDD) and Force Module deployment processes.

21. Train Routinely with the New Adaptive Planning and Deployment System

Provide an environment for the Joint Planning and Execution Community to conduct training on the four-phased process to project the force:

- Predeployment Activities;
- Movement to and Activities at the Port of Embarkation;
- Movement to the Port of Debarkation; and
- Joint Reception, Staging, Onward Movement, and Integration that integrates the actions of the following activities or entities:
  - Defense Transportation System
  - Global Transportation Network
  - Joint Flow and Analysis System for Transportation
  - Global Command and Control System
  - Global Combat Support System
  - Joint Operation Planning and Execution System
  - Transportation Coordinator's Automated Information for Movement System II
- Joint Force Requirements Generator Training should target elimination of:
  - Imbalance of mission requirements and sustainment needs based on available lift (transportation);
  - Costly (time and money) last minute changes that impact force closure and waste limited transportation assets;
  - Lost or complex in transit visibility;
  - Inaccurate baseline data for redeployment planning.

22. Train Intel Community as They Fight (Including All Levels as a Tactical Participant)

Provide training environments that simulate joint staff, combatant command, joint task force, Service component, and combat support agency headquarters and deployment units across the range of military operations, enabled by high speed connectivity and electronic collaborative tools for comprehensive execution of the intelligence cycle.

Training should emphasize:

- Knowledge of requirements and application of capabilities for operations in peacetime that provide national leadership with the information needed to realize national goals and objectives while providing military leadership with the information needed to accomplish missions and implement the national security strategy.
- Knowledge of requirements and application of capabilities for operations in war to identify the adversary's capabilities and centers of gravity, project probable courses of action, and assist in planning friendly force employment.
- Knowledge of requirements and application of capabilities for operations other than war to provide assessments that help the joint force commander decide which forces to deploy; when, how, and where to deploy them; and how to employ them in a manner that accomplishes the mission at lowest human and political cost.

23. Train the Joint Interagency Coordination Group (JIACG)

Trainer: RCC JIATS and non-DoD Agency JIACG staff Develop an environment to provide training for:

- Military staff including:
  - Understanding the non-DoD agency culture, and their core competencies, their capabilities, and how their capabilities link to RCC capabilities necessary for mission accomplishment.
- Non-DoD agency training including:
  - Understanding the military culture;
  - Understanding the capabilities of the military force;
  - Understanding deliberate, crisis action, and effects based planning and operations; and
  - Understanding how to integrate Non-DoD agency capabilities into planning and operations.

24. Train Staff to Coordinate Personnel Recovery (PR) Operations

Develop a training environment for the planning and execution of operations that combine services' capabilities with various other joint capabilities, to assist in what is an uncertain operational environment with a low- to medium-threat risk.

Elements from all sectors of the joint forces are employed:

- Search and Rescue (SAR);

- Combat Search and Rescue (CSAR);
- Joint Combat Search and Rescue (JCSAR); and
- Nonconventional Assisted Recovery (NAR).

25. Train for Global Ballistic Missile Defense (GBMD)

Develop an environment for Global Ballistic Missile Defense training that focuses on:

- Integration of the Ballistic Missile Defense System;
- Offensive/defensive integration;
- Knowledge of the command, control and communications for the BMDS elements; understanding of asset management procedures to include interpretation of outage reports;
- Planning responsibilities for STRATCOM; and
- Execution responsibilities for the Regional Combatant Commanders. Training should include planning assumptions and rules of engagement (ROE) for BMD, shot doctrine, and the integration of theater missile defense and national missile defense into a global BMD.

26. Conduct Global Strike Training

Develop an environment for Global Strike training that focuses on:

- Planning and collaboration between Gulf Cooperation Councils, component staffs, CSA's, and other US Government Agencies required to plan and integrate global strike missions with other operations;
- Deliberate and Crisis Action Planning processes;
- Developing an understanding of process relationships and proficiency in defining, planning, coordinating, and executing global strike in operational environments while supporting broader national strategy and objectives.

27. Train for Critical Infrastructure Protection (CIP)

Develop an environment to provide training in tasks associated with the CIP lifecycle:

- Mission Analysis and Assessment;
  - Identification of critical warfighting systems and assets,
  - Dependency analysis,
  - Vulnerability and risk assessment;

- Reporting and Monitoring (including indications and warnings);
- Remediation and Mitigation Methods;
- Response requirements, and
- Reconstitution of – The infrastructures, information and physical mission critical capabilities essential to the execution of the National Military Strategy. This includes the ability to plan, mobilize, deploy, sustain military operations, and transition to post conflict operations. These infrastructure elements include:
  - DoD;
  - U.S. commercial, public and private sectors;
  - Foreign commercial, public and private sectors; and
- Host Nations commercial, public and private sectors. Examples include:
  - Financial services;
  - Energy delivery;
  - Emergency services;
  - IT and communications infrastructure and access.

28. Operations/Intelligence Center Training, Integration, and Command Education (STRATCOM)

Provide an environment where integrated Operations and Intelligence battle staffs are able to train in the application of collaborative and effects-based planning/processes during both adaptive and predictive planning.

Training should be focused on developing staff proficiency for:

- Accessing current/real time information and products;
- Collaborative analysis processes; and
- Dissemination throughout a command and subordinates over redundant means.

29. Train for Strategic Information Assurance

Provide an environment where staffs are able to train on development and execution of plans, policies and procedures for provision, protection and restoration of Strategic Information Assurance during the planning and execution of operations concentrating on the following areas:

- Availability –Assured access by authorized users;

- Integrity – Protection from unauthorized change;
- Identification and Authentication – Verification of originators;
- Confidentiality – Protection from unauthorized disclosure; and
- Non-repudiation – Undeniable proof of participation. The training should:
- Stress current applicable information;
- Examine and develop an understanding of the planning and coordination between joint headquarters, component staff, and other US Government departments and agencies required to embed IA into all operations and campaign plans
- Contain three types of activities (initial orientation, advanced, and reinforcement); and
- Be conducted by knowledgeable individuals.

30. Train for Continuity of Operations

Simulate an environment where joint forces, Federal departments and agencies are implementing COOP plans, deploying predesignated personnel and leadership at alternate sites and performing essential functions at those locations.

Critical tasks may include:

- Establishing an operational capability at an alternate facility;
- Implementing succession and delegation of authority plans;
- Demonstrating an interoperable communications capability;
- Demonstrating redundant communication capabilities; and
- Demonstrating the ability to access vital information, intelligence and forces needed to conduct essential functions from their remote location. Training regimen should include test and exercise of COOP actions at regular intervals and incorporate COOP exercise events and training in conjunction with command exercises.

31. Train on Operational Systems (Dedicated Bandwidth)

32. Train on Consequence Management Operations

33. Provide Special Operations Crisis Action Procedures Training

34. Provide Intelligence Community Special Operations Forces Specific Training at the Operational Level

35. Plan, Coordinate, and Practice Mission Assurance

DATA CALL RESPONSES ORGANIZED BY TC AOA GAP AND BY RESPONDING FEDERATE

Table D-1. Data Call Responses Organized by TC AoA Gap and by Responding Federate

1 (1) 2004 rank (2006 rank)
Train Combined Joint Task Force Staffs (includes need for Individual Joint Training)

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	Extremely low footprint capability to stimulate C4ISR with JLVC is a major step to supporting this capability. Development in JLOD and JDAARS Support this training. Components such as Logistics or Intelligence audiences can be trained more easily separate from the whole of the training audience.	Serious games offer the capability when linked to Constructive & Virtual Models to cheaply support training down to the individual combatant. Very little effort has been made to support individual staff training in this domain. A gap still exists here.		60%	M	Can only partially be supported with M&S

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	JTLS offers a web-based capability to access a Live scenario to stimulate a COP picture. The simulation could also be run over SIPRNET if desired.			60%	M	Can only partially be supported with M&S

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M)(H) TA5 (N)	Federated with USAF ACE photo-realistic terrain and interactive, joint SAF, improved moving 3D models.	Federate with USN, USMC, and allied ground/air/sea models	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 L TA2 L TA3 M TA4 H TA5 L	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 - N TA2 - M TA3 - M TA4 - H TA5 - H	Total Ship Training System (TSTS) is the proposed replacement for the aging Battle Force Tactical Training (BFTT) system to address this area.	BFTT has aging technology, obsolescence commences FY10. Authoritative database; seamless integration; objective based training implementation	Approve the TSTS Initial Capability Document (ICD) and fund the program			BFTT provides operator & unit level interactions in the synthetic envmt affecting Strike Group, Coalition & Joint actions

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H **TA2**: H **TA3:** H **TA4:** H **TA5**: H	Routine employment in multi-strike force Fleet Synthetic Training exercises					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M)(H) TA5 (N)	Federated with USAF ACE photo-realistic terrain and interactive, joint SAF, improved moving 3D models.	Federate with USN, USMC, and allied ground/air/sea models	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. Weather Effects 2. TADIL Integration / Control 3. JDLM Integration 4. Transfer of Control with NGTS 5. Airfield DMPI Level Targets 6. Link-16 Messages 7. AFSERS Video Images in MPEG2 8. More Detailed MISREPs / SITREPs 9. Make Air Refueling More Realistic 10. AWSIM Display 6000 Aircraft in Playbox 11. Improved TBM Capabilities 12. ACE-IOS WX MISREPs in IOS 13. AWSIM Multi-level Terrain 14. AWSIM Flight Improvements 15. BLADE Integration 16 GIANT Integration 17. Entire Federation is now HLA Compliant 18. TST Improvements	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

2 (3) 2004 rank (2006 rank)

Train Standing Joint Force Headquarters Staff (includes need for Individual Joint Training)

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	Extremely low footprint capability to stimulate C4ISR with JLVC is a major step to supporting this capability. Development in JLOD and JDAARS Support this training			70%	H	Serious Games allow individual combatant training, very little exists to support individual staff process training

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	JTLS offers a web-based capability to access a Live scenario to stimulate a COP picture. The simulation could also be run over SIPRNET if desired.			60%	M	Serious Games allow individual combatant training, very little exists to support individual staff process training

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Federated with USAF ACE	see above	see above			see above

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 L TA2 L TA3 M TA4 H TA5 L	JNEM NKE model, automatic or manual MSEL inject model (ISM), JCATS improvements, C2 Sim/Stim					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 - N TA2 - M TA3 - M TA4 - H TA5 – H	Total Ship Training System (TSTS) is the proposed replacement for the aging Battle Force Tactical Training (BFTT) system to address this area.	BFTT has aging technology, obsolescence commences FY10. Authoritative database; seamless integration; objective based training implementation	Approve the TSTS Initial Capability Document (ICD) and fund the program			Provides operator & unit level interactions in the synthetic envmt affecting Strike Group, Coalition & Joint actions

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H **TA2**: H **TA3:** H **TA4:** M **TA5**: M	Use in Terminal Fury 07 and planned use in Terminal Fury 08 in conjunction with JLVC					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Federated with USAF ACE	see above	see above			see above

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. Weather Effects 2. TADIL Integration / Control 3. JDLM Integration 4. Transfer of Control with NGTS 5. Airfield DMPI Level Targets 6. Link-16 Messages 7. AFSERS Video Images in MPEG2 8. More Detailed MISREPs / SITREPs 9. Make Air Refueling More Realistic 10. AWSIM Display 6000 Aircraft in Playbox 11. Improved TBM Capabilities 12. ACE-IOS WX MISREPs in IOS 13. AWSIM Multi-level Terrain 14. AWSIM Flight Improvements 15. BLADE Integration 16 GIANT Integration 17. Entire Federation is now HLA Compliant 18. TST Improvements	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

3 (9) 2004 rank (2006 rank)
Train on Crisis Action planning and deployments

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- High TA4- High TA5- Medium	By using JDLM-DESS-JLOD and JCATS we can stimulate every aspect of this thread from conception and planning to COA Analysis to stimulation of consumption. The federation also provides the capability to execute at faster than real-time to support months of deployment planning.	Though this capability exists at the technical level, exercises at other than real-time wall clock are rarely conducted by JFCOM.	Changes to exercise design are required to support certain aspects of CAP. These efforts are under way at JFCOM. The issue is larger than an M&S Technical one. Further efforts are under way to make the support capability cheaper. A great deal of specialized expertise is still required to stimulate a training audience at the national level conducting a Deployex.	90%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- Medium	By using JDLM-DESS-JTLS and JCATS we can stimulate every aspect of this thread from conception to deployment. The JMRM Federation cannot play consumption at the NSN Level, but all parts of the deployment capability exist.	Though this capability exists at the technical level, exercises at other than real-time wall clock are rarely conducted by JFCOM.	Changes to exercise design are required to support certain aspects of CAP. These efforts are under way at JFCOM. The issue is larger than an M&S Technical one. Further efforts are under way to make the support capability cheaper. A great deal of specialize	70%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics				

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF does not efficiently train crisis action planning.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: M TA3: M TA4: M TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics				

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

4 (22) 2004 rank (2006 rank)

Provide faster/higher fidelity mission rehearsal

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- Medium	Enormous strides have been made in this area in terms of scenario preparation, execution at reduced cost and AAR capabilities. In particular, the Order of Battle for a MR can be created and task organized very quickly using Order of Battle Service within JTDS. The Terrain Generation Service Provides the capability to rapidly create correlated Terrain (Constructive Representation). Advances in the collection and use of source data such as LIDAR have offered huge advances in this area and reduced terrain production times from months to days or in some cases hours. Work that we are doing to synchronize the MSEL structure with the simulation also supports rapid execution of rehearsals. It is no longer true that M&S is the primary shortfall.	Rapidly creating the civilian environment for a large Mission Rehearsal at the Division to JTF Level is still a shortfall. Though the JTDS provides Order of Battle and terrain capability, we cannot yet produce correlated 2D and 3D Terrain automatically. Labor is still needed to accomplish this. Finally, we still cannot easily reconcile a target folders (large ones) with the terrain data. This is a major problem that will take several years to solve.	By 2009, we hope to have a production version of a targeting and Infrastructure service that can rapidly integrate the information in an ONA (Operational Net Assessment) with a target folder and the terrain database and allow the user to correlate all 3 of these.	75%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- Medium	Enormous strides have been made in this area. The JTDS will very soon support the JMRM Federation which will allow scenarios of significant size spanning the globe to be initialized quickly. JCATS Allows for fairly detailed representation of urban environments and now that Entity Base Objects have been added to JMRM a 3D Viewer could also be used	Rapidly creating the civilian environment for a large Mission Rehearsal at the Division to JTF Level is still a shortfall. Though the JTDS provides Order of Battle and terrain capability, we cannot yet produce correlated 2D and 3D Terrain automatically.		70%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M)(H) TA5 (N)(M)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 H TA2 H TA3 H TA4 H TA5 H	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 - N TA2 - M TA3 - M TA4 - H TA5 - H	Total Ship Training System (TSTS) is the proposed replacement for the aging Battle Force Tactical Training (BFTT) system to address this area.	Training Database commonality; level 'playing field' and contact limitations in associated system-of-systems OBT family.	Services implement authoritative, exportable target & envmt databases.			BFTT not serviceable for growth in this area. TSTS is required.

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: M	Significant improvements in ASW and EW modeling fidelity					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M)(H) TA5 (N)(M)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

5 (40) 2004 rank (2006 rank)
Train forces on joint urban operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- Medium TA5- High	Huge strides have been made in this area as well. JCATS provides an extremely robust capability to support a large urban scenario such as Fallujah in which 6-8 maneuver battalions engaged about 4-600 defenders with 30K Civilians. JCATS can represent 10s of thousands of buildings and interactively damage these structures. By the end of 2008, we will also be able to represent communications traffic within urban areas with a fair degree of accuracy that will support signal operations play in these environments.	Rapidly creating the civilian environment is still an issue as mentioned earlier. This includes not only the populations and day to day activity but also networks such as powerlines and medical care that need to be represented. Another major enhancement required is to share building damage for BDA purposes within the federation. This is in work. The 3D and 2D representation of building damage across the federation needs to be normalized.	By 2009, we hope to have a capability to rapidly initialize a city with a reasonable representation of networks and mark-up the terrain to support completely automated population movement.	75%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- High	Huge strides have been made in this area as well. JCATS provides an extremely robust capability to support a large urban scenario such as Fallujah in which 6-8	Rapidly creating the civilian environment is still an issue as mentioned earlier. This includes not only the populations	By 2009, we hope to have a capability to rapidly initialize a city with a reasonable representation of networks and mark-up	75%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	maneuver battalions engaged about 4-600 defenders with 30K Civilians. This capability is the same for JMRM and JLVC	and day to day activity but also networks such as powerlines and medical care that need to be represented. JTLS has some representation of these that goes beyond JLVC, but they cannot be initialized rapidly.	the terrain to support completely automated population movement.			

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Developed Joint Non-kinetic Effects Model (JNEM)	JNEM emphasis on "M" of DIME	Further develop "D-I-E"			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 H TA4 H TA5 H	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					JCATS detailed urban terrain generation capability allows any level of building sophistication.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						NCTE core simulation (JSAF) used extensively in JUO by JFCOM/J9

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Developed Joint Non-kinetic Effects Model (JNEM)	JNEM emphasis on "M" of DIME	Further develop "D-I-E"			

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - L TA2 - H TA3 - H TA4 - H TA5 - L	1. Weather Effects 2. TADIL Integration / Control 3. JDLM Integration 4. Transfer of Control with NGTS 5. Airfield DMPI Level Targets 6. Link-16 Messages 7. AFSERS Video Images in MPEG2 8. More Detailed MISREPs / SITREPs 9. Make Air Refueling More Realistic 10. AWSIM Display 6000 Aircraft in Playbox 11. Improved TBM Capabilities 12. ACE-IOS WX MISREPs in IOS	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological,	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
	13. AWSIM Multi-level Terrain 14. AWSIM Flight Improvements 15. JDLM Integration 16. LOGSIM Improvements 17. FAA Flight Plans 18. BLADE Integration 19. GIANT Integration 20. DESS Integration 21. Entire Federation is now HLA Compliant 22. TST Improvements	Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

6 (6) 2004 rank (2006 rank)

Train forces on IO (including Information Warfare, Computer Network Exploitation, Computer Network Defense, and Computer Network Attack)

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Low TA3- Low TA4- Medium TA5- Low	Within IO, We have added Federation Electronic Warfare which covers most types of jamming but not interference of those signals (this is in work). We have also added the concept of deception and have numerous features in the model that support this kind of play. A highlight would be the disguise capability that has been added to JCATS. We temporarily added an NSA simulation to the JLVC called ACRES which provides some representation of Computer networks and vulnerabilities. This simulation lost funding and the capability no longer exists. We have at best only a crude capability to represent PSYOPs.	Short falls exist in terms of representing PSYOPS and Computer Network Environments. Representation of Morale for Military forces and civilian populations is a complex problem. First, we need to model the population fully before this can be finished. We are working on this problem. The Computer Network issue is much worse. Only a small number of true SMEs exist in this domain (most at NSA) and the existing databases for this sort of information are highly sensitive. For the most part maintained at the TS/SCI level. The Multi-Level Security issues will continue to limit progress until we can develop a comprehensive rule-set for exchanging data at various classification levels.	Our focus in the near-term needs to be on civilian population representation to at least support PSYOPs play. Related domains such as Civil Affairs will benefit from this as well. The Computer Network problem is significant and cannot be solved with current funding levels.	40%	L	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Low TA3- Low TA4- Medium TA5- Low	JTLS has a concept of Electronic Warfare that represents the effects if not the actual signals, and Psyops at an extremely basic level. Within the JMRM, this is not yet linked to JCATS but is planned for FY08.	Short falls exist in terms of representing PSYOPS and Computer Network Environments. Representation of Morale for Military forces and civilian populations is a complex problem. First, we need to model the population fully before this can be finished.	Our focus in the near-term needs to be on civilian population representation to at least support PSYOPs play fully. Related domains such as Civil Affairs will benefit from this as well. The Computer Network problem is significant and cannot be solved with curre	50%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM simulates the interactions of US, allied, civilian, hostile and non-governmental groups. Enhanced HUMINT capabilities	Simplistic modeling of HUMINT	Continue to incorporate TRAC HUMINT model			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N		No IO Capability except direct action.	Build an IO module in ERF or in JCATS.			ERF does not replicate this capability.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: M						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM simulates the interactions of US, allied, civilian, hostile and non-governmental groups. Enhanced HUMINT capabilities	Simplistic modeling of HUMINT	Continue to incorporate TRAC HUMINT model			

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. Improvements in IOS: a. TS IOS Interface b. DICE Interface c. Better interface w/ AFSERS d. IOS Data Translator for Link-16, IBS, USMTF Correlation & fusion. e. TBM Warning Capability f. NESI Compliance - NSA C&A g. Networks model for SIGINT	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects	reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

7 (2) 2004 rank (2006 rank)

Train forces in a Joint Interagency Intergovernmental, Multinational environment (including intelligence community participants)

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Medium TA3- Medium TA4- Low TA5- Low		The major shortfall we have in support of Coalition Play (which has been under way for many years) is some sort of comprehensive Mulit-Level Security Solution. We have no provision to share SECRET US ONLY information and filter sensitive data. Parametric data used in our high resolution models like JCATS and JSAF often is Classified and cannot be shared easily. As discussed earlier, Modeling the activities of organizations that operate in the Non-Military domains such as economic and diplomatic are not-modeled well. In addition to these technical issues, policy and funding levels have prevented large scale cooperation and major	Our focus in the near-term needs to be on civilian population representation to at least support Non-DoD and Non Military activity in the Diplomatic and Economic Shoers. These enhancements will greatly support our ability to fill this gap. The Multi-Level Security issues require additional funding to solve in a comprehensive way.	30%	L	

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
		exercises involving many Non-DoD organizations participating as part of the training audience in Joint Exercises. The COCOM where this is changing is NORTHCOM.				

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Medium TA4- Low TA5- Low	JTLS has a long and successful history of supporting coalition play. The 10 sides offered by JTLS has allowed it to support Coalition exercises like SEESIM and Bright Star with many participating countries. Bright Star 05 was run as a JMRM exercise with a high fidelity Mission Rehearsal inside the larger exercise. The JMRM will be delivered in February 07 to JWC in Stavanger where it will be used to support NATO exercises. JIIM support is a major focus of the JMRM.	The major shortfall we have in support of Coalition Play (which has been under way for many years) is some sort of comprehensive Mulit-Level Security Solution. We have no provision to share SECRET US ONLY information and filter sensitive data.	Our focus in the near-term needs to be on civilian population representation to at least support Non-DoD and Non Military activity in the Diplomatic and Economic Shoers. These enhancements will greatly support our ability to fill this gap.	55%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 L TA3 M TA4 H TA5 M	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim, IEWTPT					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 - N TA2 - M TA3 - M TA4 - H TA5 – H	Total Ship Training System (TSTS) is the proposed replacement for the aging Battle Force Tactical Training (BFTT) system to address this area.	BFTT is approaching critical obsolesce FY 10. There is no funded replacement system putting syntheitc Fleet combat system training in jeopardy	Approve the TSTS Initial Capability Document (ICD) and fund the program			BFTT provides shipboard operator & unit level stimulus to this envmt via NCTE. BFTT not serviceable for growth in this area. TSTS is required.

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: M TA3: M TA4: M TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities			

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - H TA2 - H TA3 - H TA4 - H TA5 - L	1. Weather Effects 2. TADIL Integration / Control 3. JDLM Integration 4. Airfield DMPI Level Targets 5. Link-16 Messages 6. AFSERS Video Images in MPEG2 7. More Detailed MISREPs / SITREPs 8. Improved TBM Capabilities 9. ACE-IOS WX MISREPs 10. AWSIM Multi-level Terrain 11. Improvements in AFSERS: a. Distributed DCGS Tng Cap b. MSI Support c. MTI Trainer d. SAR Support e. High Throughput - DIS Entities	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
	f. Added BFT, Link-16 Interfaces, Frequency Allocation Management, Secure Link Encryption g. EBO Support 12. Improvements in IOS: Improvements in IOS: a. TS IOS Interface b. DICE Interface c. Better interface w/ AFSERS d. IOS Data Translator for Link-16, IBS, USMTF Correlation & fusion. e. TBM Warning Capability f. NESI Compliance - NSA C&A g. Networks model for SIGINT h. TST Improvements 13. Blade Integration 14. GIANT Integration 15. Entire Federation is now HLA Compliant	7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

8 (19) 2004 rank (2006 rank)
Provide Homeland Defense Training

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 - Medium TA3- Mediun TA4- Medium TA5- Medium	Major Improvements have been made in this area. We can now scale to the scenario size needed to represent NORTHCOM CAX events using JLOD. We are representing all Civilian Air and Maritime Traffic of interest Globally as well as all the HLD resources including radar networks. By the end of FY08, we will be able to Support NORAD Command and control feeds which was a major challenge. We also expect to take major steps in representation of Nuclear and Bio attack and the effects on civilian infrastructure. The weather enhancements in JLVC will support modeling of natural disaster scenarios such as Hurricane Katrina. We have also made	Issues still open are Civilian Population representation and civilian power networks. These are needed to model Bio-and Nuclear threats, and natural disasters and the collapse/degradation of state and local infrastructure.	In addition to the technical issues policy and funding issues need to be resolved to generate training events that include many of the non-governmental or non-DoD organizations as part of the training audience.	60%	M	

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	great strides in JCATS to support the Nuclear Security Community and risk assessment studies for critical asset protection.					

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Mediun TA4- Medium TA5- Medium	2 Major HLS Exercises have been done with JMRM in Support of NORTHCOM, Determined Promise 04 and Ardent Sentry 05. Each of these were significant exercises in terms of size. The JMRM JDLM Strategic Lift capability would allow the use of JOPES and the JMRM Supports the Global HLS environment.	JMRM does not include the AFMSTT effort to link to NATO C2 Systems.	In addition to the technical issues policy and funding issues need to be resolved to generate training events that include many of the non-governmental or non-DoD organizations as part of the training audience.	50%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 M TA5 N	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 - N TA2 - M TA3 - M TA4 - H TA5 - H	Total Ship Training System (TSTS) is the proposed replacement for the aging Battle Force Tactical Training (BFTT) system to address this area.	Limited by databases, architecture, interfaces & integration efforts.	Interface definition; open design architecture; implement authoritative, commonly understood databases.			BFTT provides shipboard operator & unit level stimulus to this envmt via NCTE. BFTT is not serviceable for growth in this area. TSTS is required.

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities			

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - H TA2 - H TA3 - H TA4 - H TA5 - L	1. Weather Effects 2. TADIL Integration / Control 3. JDLM Integration 4. Airfield DMPI Level Targets 5. Link-16 Messages 6. AFSERS Video Images in MPEG2 7. More Detailed MISREPs / SITREPs 8. Improved TBM Capabilities 9. ACE-IOS WX MISREPs in IOS 10. AWSIM Multi-level Terrain 11. AWSIM Flight Improvements 12. FAA Flight Plans 13. BLADE Integration 14 GIANT Integration 15. Entire Federation is now HLA Compliant 16. TST Improvements	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

9 (23) 2004 rank (2006 rank)

Provide multi-command missile defense training

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Low TA4- Medium TA5- Low	Our efforts to stimulate NORAD C4I systems greatly supports this effort. Using MDST, we can Model Missile shots and within the Federation the early waning cycle and certain types of intercept capability	Once the problem of stimulating NORAD C2 Systems and modeling the effects of nuclear detonations in JCATS JLOD, Our capability to support this gap will be quite robust.		80%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Low TA3- Low TA4- Medium TA5- Low	Using MDST, we can Model Missile shots and within the Federation	Comprehensive CBRNE Environments are not planned at the moment for JMRM as JIIM is the primary focus.		20%	L	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 H TA5 N						MRX or seminar employment for Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 - N TA2 - M TA3 - M TA4 - H TA5 - H	Total Ship Training System (TSTS) is the proposed replacement for the aging Battle Force Tactical Training (BFTT) system to address this area.	Limited by databases, architecture, interfaces & integration efforts.	Interface definition; open design architecture; implement authoritative, commonly understood databases.			BFTT can develop a limited capability in this area. TSTS is addressing shortfalls in this area.

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: M TA3: M TA4: M TA5: M	Integration with MDA tools underway using service funding					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
						We are working on improvements that will affect this area, particularly with respect to Space Operations and Control, and BMD launch, control, display and effects.

10 (29) 2004 rank (2006 rank)

Train forces in enemy Chemical, Biological, Radiological, Nuclear, and Electromagnetic exploitation and destruction

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -Medium TA3- Medium TA4- High TA5- Medium	Currently, JCATS has the ability to model Non-persistent Chemical Effects and the initial blast effects of nuclear weapons. There is very little CBRNE representation in the federation. For the next development cycle of the JLVC which will be complete by the spring of 08, comprehensive enhancements are planned. Consistent weather representation will be played in the federation, and Persistent, Non-Persistent Chemical, Nuclear primary and secondary and limited bio-weapons spread representation will be supported. This capability will be supported across the LVC domains. Chemical Forces and detection devices across these domains will also be represented.			70%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Medium TA4- High TA5- Medium	Currently, JCATS has the ability to model Non-persistent Chemical Effects and the initial blast effects of nuclear weapons. This information Is not yet shared in the Federation	Comprehensive CBRNE Environments are not planned at the moment for JMRM as JIIM is the primary focus. JCATS can model these effects in stand-alone mode but the information is not shared in the federation		50%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	ISM used as a MESL inject tool with results shown in ground models	Accurate replication of effects	Model effects of CBRNE			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N		Does nor replicate realistic CBRNE.	JCATS must replicate the direct and indirect effects of chemical, biological and radiological weapons			

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L		No capability				

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	ISM used as a MESL inject tool with results shown in ground models	Accurate replication of effects	Model effects of CBRNE			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

11 (31) 2004 rank (2006 rank)

Train to operate in Chemical, Biological, Radiological, Nuclear, and Electromagnetic environment

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	In addition to the comments made above which also apply here, JCATS will have the capability in Version 9.0 to model deliberate decontamination of persistent chemicals. The capability to consume all types of chemical supplies associated with this is also planned such as decon materials and to transport and dispose of hazardous materials.	The major shortfall is the ability to represent population infrastructure and issues such as key locations/fixed sites capable of storing and or disposing of hazardous material.	By Fall 2008, the JLVC TE will provide the infrastructure to simulate a wide range of adversary capabilities by leveraging both existing and emerging Programs of Record for modeling these capabilities. The JLVC TE will begin to provide the capability to train combatant command staff and the joint task force staff to manage the effective deployment of joint sensors and to ensure that service component commanders are advised of the hazards detected by these sensors in a timely fashion. Staff and commanders will be trained to	50%	M	

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
			respond effectively through standard TTPs and the effects on unit effectiveness will be modeled accordingly. The effects of hazards on all exercise participants including civilians will be modeled consistently. The ability to train with coalition forces to respond will be limited as a result of reliability restrictions on preferred modeling capabilities.			

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- High TA5- Low	In addition to the comments made above which also apply here, JCATS will have the capability in Version 9.0 to model deliberate decontamination of persistent chemicals. The capability to consume all types of chemical supplies associated with this is also in	Comprehensive CBRNE Environments are not planned at the moment for JMRM as JIIM is the primary focus. JCATS can model these effects in stand-alone mode but the information is not shared in the federation	The intention is to have one high-resolution LVC CBRNE Linkage and to implement a basic capability in JMRM.	50%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	work. Actual contaminated areas will not be shared in the Federation					

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	ISM used as a MESL inject tool with results shown in ground models	Accurate replication of effects	Model effects of CBRNE			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N		Does nor replicate realistic CBRNE.	JCATS must replicate the direct and indirect effects of chemical, biological and radiological weapons			

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L		Limited capability	Utilize development in JSAF implemented by DTRA			

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	ISM used as a MESL inject tool with results shown in ground models	Accurate replication of effects	Model effects of CBRNE			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

12 (7) 2004 rank (2006 rank)
Train on Effects Based Planning/Operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Medium TA3- Medium TA4- Medium TA5- Medium	Major efforts are under way to support this gap. Additional federates such as the Army Non-Kinetic Effects Model (JNEM) and the J9 sponsored SEAS are being integrated with the JLVC. JNEM provides additional realism to the training audience by providing messages during run-time as friendly forces interact with the training audience. SEAS provides a forecasting capability to project out effects, economic, political, and diplomatic over weeks, months and years. The resulting status of the population will be imported into the simulations and federation as a static file. JLOD is also represents the actual population objects at a high level and can take a scenario file from SEAS and stimulate the neighborhood (abstract	There is very little notion currently of representing high level diplomatic activity and economic activity. For example, there is still very little concept of a high level cyber attack on a banking network or the capability to cause a mass drop in stock levels that can have an impact on global economies. The work under way currently helps to address the impact of civilians and infrastructure on operations at the Operational and Tactical Level. A major gap will still exist at the Strategic Level. In addition very little modeling of long term social activity exists.	This gap will not be closed fully for many years, though tremendous progress has been made.	50%	M	

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	concept) in JNEM. Finally an advanced prototyping effort is under way to include high fidelity crowd behavior in JSAF. This effort is aimed at high resolution vignettes needed to support tactical level training audiences.					

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Low TA3- Low TA4- Medium TA5- Medium	JTLS is developing a basic concept of civil environments and logistics issues that focus on Operational Training Audiences. The effort will represent large bodies of displaced civilians as part of disaster relief scenarios.	There is very little notion currently of representing high level diplomatic activity and economic activity. The JMRM will not incorporate specialized non-kinetic effects models like the JLVC.	This gap will not be closed fully for many years, though tremendous progress has been made. JTLS and JMRM will focus on a high level representation of population groups in the disaster relief and crisis action scenarios. The focus will be on Tier 1 and 2 Level Audiences. The intention is to implement 50% of the capability with the primary federates at 5% of the cost	40%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 L TA2 M TA3 M TA4 H TA5 N	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L		Limited capability	Leverage current JLVC development			Need better understanding of the problem

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities			

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - L TA2 - H TA3 - H TA4 - H TA5 - L	1. Improvements in GIAC for EBO 2. Improvements in AFSERS: a. Distributed DCGS Tng Cap b. MSI Support c. MTI Trainer d. SAR Support e. High Throughput - DIS Entities f. Added BFT, Link-16 Interfaces, Frequency Allocation Management, Secure Link Encryption g. EBO Support h. TST Improvements 3. Expanded AFSERS integrations with other systems (JTACS, etc.)	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

13 (4) 2004 rank (2006 rank)

Train Theater/Strategic forces to conduct C4I operations using Collaborative Information Environment

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Medium TA4- Medium TA5- Low	The one enhancement that applies is the Joint Training Data Services Effort that allows for a web service based , distributed, collaborative review editing and verification of the terrain and order of battle for a particular scenario. The ONA Tools developed to work with SEAS are another example of providing a web service based collaborative Decision support and planning tool.	For the most part, this gap is not M&S related. New supporting technologies such as the GIG are needed before this gap can be filled. Only partial overlap exists with M&S.		50%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Medium TA4- Medium TA5- Low	The one enhancement that applies is the Joint Training Data Services Effort that allows for a web service based , distributed, collaborative review editing and verification of the terrain and order of battle for a particular scenario. This	For the most part, this gap is not M&S related. New supporting technologies such as the GIG are needed before this gap can be filled. Only partial overlap exists with M&S.		50%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	applies to JMRM and JLVC					

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	C2 stimulation provided for in all instantiations of MRF federation	Access to new/improved C2 devices and software	Continue to develop C2 stimulation solutions in real time to meet current C2 requirements			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 H TA5 H	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: H	Development of high fidelity multi-level platform modeling of contact reporting and communications					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	C2 stimulation provided for in all instantiations of MRF federation	Access to new/improved C2 devices and software	Continue to develop C2 stimulation solutions in real time to meet current C2 requirements			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

14 (14) 2004 rank (2006 rank)

Train forces on realistic logistics requirements (including Reception Staging and Onward Movement Integration)

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- Medium	The Joint Training Data Services effort has essentially enabled most of the advances in this area. The training audience is now provided consumption, medical, and maintenance play at the billet/Stock number Level. In the ground domain, all manner of supplies are represented at the stock number level of detail. Using the Federation in conjunction with DESS and JDLM, the entire thread of Logistics operations from Transcom down to the tactical level can be played with appropriate consumption levels. This would not have been possible without the concept of an order of battle service and the concept of publishes large and highly detailed order of battle information	Not all forces are modeled to the same degree of fidelity as the land forces. AF Units are still not represented at the billet level, only the platform level, as result, consumption is not completely realistic. A second shortfall is modeling the logistics aspects of a civilian infrastructure. For example the use of local hires and labor to support a sustained support infrastructure as exists in Iraq. Finally we do not yet represent the logistics aspects of construction engineering.	In order to take full advantage of the capabilities available we need to add the capability to JTDS to address all manner of stockage levels associated with Air Bases and other major supply bases in various theaters. We also need to conduct exercises in terms of weeks and months, not just in real-time.	80%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -Medium TA3- Medium TA4- High TA5- Low	The Joint Training Data Services effort has essentially enabled most of the advances in this area. The training audience is now provided consumption, medical, and maintenance play at the billet/Stock number Level. In the JMRM, the deployment thread can be exercised, but not the consumption at NSN Level.	Consumption cannot be represented at the lowest level of detail. JCATS can consume supplies at this level in stand-alone but transferred supplies are defined in terms of JTLS Supply categories which are at the bul level. Special interest supplies can be tracked by creating unique JTLS Supply categories.	In order to take full advantage of the capabilities available we need to add the capability to JTDS to address all manner of stockage levels associated with Air Bases and other major supply bases in various theaters. We also need to conduct exercises in different time scales.	60%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 L TA2 L TA3 L TA4 L TA5 L						JDLM provides excellent tactical through strategic logistics but ERF does replicate RSOI scenarios well except in a seminar type exercise.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L	Integration and development of JSAF logistics models with JDLM (JLVC federation capability)					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - L TA2 - H TA3 - H TA4 - H TA5 - L	1. JDLM Integration 2. LOGSIM Improvements 3. DESS Integration	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

15 (37) 2004 rank (2006 rank)
Practice AC/RC Integration and Mobilization Training

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Very little has been done by M&S to address this Gap. It does not appear to be applicable to M&S beyond the fact that reserve elements can participate in a distributed fashion from home station. We have also proliferated the JCATS software to a large number of reserve component Army sites.				N/A	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Very little has been done by M&S to address this Gap. It does not appear to be applicable to M&S beyond the fact that reserve elements can participate in a distributed fashion from home station. We have also proliferated the JCATS software to a large number of Reserve component Users.				N/A	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF can provide excellent training for mobilizing units but it cannot replicate mobilization training activities.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: M						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

16 (30) 2004 rank (2006 rank)
Train forces on Stability and Support Operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	A number of important enhancements that impact on SASO Operations. In JCATS a new checkpoint and search capability has been added along with the concept of disguise to model insurgent activity. The enhancements that are under way to support the Effects Based Approach to Operations that include civilian population and infrastructure modeling will support SASO. In particular, Civilian affairs operation will be represented. These enhancements should be in place by the Spring of FY08. Initial humanitarian assistance of refugees and displaced civilians.	Once the civilian population is modeled at a basic level, many gaps will still exist that impact on SASO Ops. Construction engineering and infrastructure repair will be desired once they are modeled. Power lines and the concept of available labor as it pertains to economic growth will be gaps.		50%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	A number of important enhancements that impact on SASO Operations. In JCATS a new checkpoint and search capability has been added along with the concept of disguise to model insurgent activity. JCATS also provides high res drill down capability for Urban Operations. JTLS will also incorporate a high level cordon and search capability intended for use with highly aggregated units.	Once the civilian population is modeled at a basic level, many gaps will still exist that impact on SASO Ops. Construction engineering and infrastructure repair will be desired once they are modeled. Power lines and the concept of available labor as it pe	The intent of the JMRM is to provide 70% of the capability available in the JLVC at 10% of the cost. JMRM will not be maintained as a large Federation. Enhancements will be made to the Joint Models to focus on Tier 1/2 Audiences with drill down in JCATS for select tactical vignettes.	60%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities-add ability to supply civilian groups and neighborhoods			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 H TA5 M	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					MRX or seminar employment for Strategic and Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: M TA3: M TA4: M TA5: M						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities-add ability to supply civilian groups and neighborhoods			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

17 (12) 2004 rank (2006 rank)
Train forces on Military Assistance to Civilian Authorities Operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Medium TA3- Low TA4- Medium TA5- Low	The weather enhancements which include natural disaster modeling and civilian infrastructure including collapse) currently in work in the JLVC will address a significant portion of this gap. The JDLM program has also been developing a civilianized version of the Military Logistics simulation that is directed at supporting civilian crisis management and decision making primarily at the state level. This is scheduled for Integration with the JLVC in the Fall. present many of the details of this gap have yet to be established due to the limited amount of interagency and	Representation of Economic factors in M&S will continue to be extremely basic. This is a major aspect of this gap. In general, more needs to be understood about civilian crisis management in order to close this gap.		50%	M	

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	Non-DoD cooperation in Joint Exercises. This is still a funding and a policy issue.					

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Medium TA3- Low TA4- Medium TA5- Low	The weather enhancements which include natural disaster modeling will apply to JMRM as well. The weather Service Data will be consumed by JTLS as well in JTLS 4.0. The civilian population representation intended for JTLS will focus on disaster relief at the operational level and should support this gap.	Representation of Economic factors in M&S will continue to be extremely basic. This is a major aspect of this gap. In general, more needs to be understood about civilian crisis management in order to close this gap.	The intent of the JMRM is to provide 70% of the capability available in the JLVC at 10% of the cost. JMRM will not be maintained as a large Federation. Enhancements will be made to the Joint Models to focus on Tier 1/2 Audiences with drill down in JCATS for select tactical vignettes.	60%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities-add ability to supply civilian groups and neighborhoods			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 L TA3 L TA4 L TA5 N	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim	JCATS does not replicate military/civil engineering well.	Improve JCATS military/civil engineering capabilities.			

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further diplomatic, information, and economic enhancements	Continue to refine and add to JNEM-ISM capabilities-add ability to supply civilian groups and neighborhoods			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

18 (24) 2004 rank (2006 rank)

Train Special Operations Forces and conventional forces for integrated operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- Medium	In general, the high resolution models, JCATS, JSAF, and AWSIM provide extremely high fidelity representation of SOF Operations for the range of kinetic missions such as combat, raids, personnel recovery and reconnaissance missions. The JTDS project allows for much faster creation of high resolution terrain in hours that previously took weeks and months.	SOF Missions in the non-kinetic domain such as Civil Affairs, training foreign armies and more complex tasks such as causing regime changes are not yet well represented. Psyops is an area that is still unsupported requiring will to fight.	Efforts under way to provide civilian population modeling will address some of the remaining shortfalls. It is important to note that Psyops is a more complex problem in that it requires representation of will to fight for military and civilian forces.	80%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- Medium	The JMRM Federation has a robust capability to represent SOF forces at the tactical and Operational Level.	SOF Missions in the non-kinetic domain such as Civil Affairs, training foreign armies and more complex tasks such as causing regime changes are not yet well represented. Psyops is an area that is still unsupported	Efforts under way to provide civilian population modeling will address some of the remaining shortfalls. It is important to note that Psyops is a more complex problem in that it requires representation of will to fight for military and civilian forces.	80%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
		requiring will to fight.				

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 H TA5 M	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements, C2 Sim/Stim					

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L			Enhance existing JSF models and leverage JFCOM/J9 efforts			

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

19 (18) 2004 rank (2006 rank)
Train forces (operational and tactical level) to use National Intelligence Systems

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Medium TA4- Medium TA5- Low	Given that the Federation is now able to scale and support much larger scenarios, much of this gap can soon be closed. The JLOD effort in particular support our ability to provide a realistic wrap around environment physically and electronically. National sensors can now collect against much larger portions of an enemy Order of Battle.	As mentioned numerous times before, the civilian population and infrastructure is still not represented. The other major issue is reconciling Imagery with Target Folders. A significant portion of National Intelligence Collection is Spaced Based so Imagery is vital to presenting a realistic picture.		60%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Low TA3- Low TA4- Medium TA5- Low	Great strides have been made in the JMRM in terms of supporting this capability. In the past numerous Intelligence Federates presented widely differing pictures of JTLS Units at platform Level. The JTLS Entity Level Server ensures that the representation is	As mentioned numerous times before, the civilian population and infrastructure is still not represented. The other major issue is reconciling Imagery with Target Folders. A significant portion of	It is possible that JFCOM will add JCATS/JLOD Federate to JMRM but that has not yet been determined. The JLOD best supports this gap.	30%	L	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
	at least consistent if lacking in fidelity.	National Intelligence Collection is Spaced Based so Imagery There is still a significant fidelity issue with JMRM in terms of representing all kinds of entity signatures.				

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Added NWARS-NG	Realistic HUMINT capability	Continue to develop and refine TRAC HUMINT model			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 H TA3 H TA4 H TA5 M	JNEM NKE model, automatic or manual MSEL inject model (ISM) , JCATS improvements; updated sensors in TACSIM; and updated links to C2 systems (DCGS-A, etc.) , C2 Sim/Stim, IEWTPT					

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: M TA3: M TA4: M TA5: L			Integration of JSAF with ACRES (NSA COMINT model)			

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Added NWARS-NG	Realistic HUMINT capability	Continue to develop and refine TRAC HUMINT model			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

20 (28) 2004 rank (2006 rank)

Train routinely with the Joint Operation Planning and Execution System

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- High TA4- High TA5- High	Once the Integration of the JLVC Federation with the version of JDLM that supports DESS linkage this Gap should be closed. The deployment planning for forces using JOPES can be exercised to include flowing these forces into the maneuver simulations of the JLVC and generating consumption.	If anything there would still be an issue with the level of detail to which AF Units are represented.	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	95%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- High	The Version of JLDM that currently works with DESS is the same version that is used to support JMRM. The capability provides every aspect of deployment but not high resolution consumption.	The JMRM does not represent consumption at high resolution like the JLVC.	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	80%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF does not replicate JOPES planning.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: M TA3: M TA4: M TA5: M	Integration and development of JSAF logistics models with JDLM (JLVC federation capability)					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

21 (26) 2004 rank (2006 rank)

Train routinely with new adaptive planning and deployment system

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- High TA4- High TA5- High	Once the Integration of the JLVC Federation with the version of JDLM that supports DESS linkage this capability should also be nearly complete. All aspects of forces deployment and consumption can be represented.	If anything there would still be an issue with the level of detail to which AF Units are represented.	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	90%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- High	The Version of JLDM that currently works with DESS is the same version that is used to support JMRM. The capability provides every aspect of deployment but not high resolution consumption.	The JMRM does not represent consumption at high resolution like the JLVC.	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	80%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF does not replicate deployment efficiently.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L	Integration and development of JSAF logistics models with JDLM (JLVC federation capability)					

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

22 (15) 2004 rank (2006 rank)

Train Intelligence community as they fight (including all levels as a tactical participant)

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -High TA3- High TA4- High TA5- Low	Given that the Federation is now able to scale and support much larger scenarios, much of this gap can soon be closed. The JLOD effort in particular support our ability to provide a realistic wrap around environment physically and electronically. National sensors can now collect against much larger portions of an enemy Order of Battle. The JLVC provides the lowest level of of information that includes physical representation to a virtual UAV, to radar signature to emitter signature. Battle Damage Assessment Interactions and reporting are now managed centrally by a BE Server which is part of the ACE-IOS suite. The federation can also aggregate this information if needed when not all levels of the training audience are present.	As mentioned numerous times before, the civilian population and infrastructure is still not represented. The other major issue is reconciling Imagery with Target Folders. A significant portion of National Intelligence Collection is Spaced Based so Imagery is vital to presenting a realistic picture.	Never in a Joint Exercise are all the levels of an Intelligence Training Audience present from National to Tactical. Real-World scheduling and resource issues preclude this as a practical activity. Thought should be given to rewording this requirement to any Intelligence audience or a mix of levels which can be more difficult that supporting the Intelligence audience from the lowest level up.	70%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -High TA3- High TA4- High TA5- Low	Great strides have been made in the JMRM in terms of supporting this capability. In the past numerous Intelligence Federates presented widely differing pictures of JTLS Units at platform Level. The JTLS Entity Level Server ensures that the representation is at least consistent if lacking in fidelity.	As mentioned numerous times before, the civilian population and infrastructure is still not represented. The other major issue is reconciling Imagery with Target Folders. JTLS can represent the raw quantity of objects needed, but not the fidelity.	The requirement to represent enormous numbers of objects for sensor collection at the appropriate level by an Intelligence Analyst (Tier4/5) is being met with JLOD. JLOD may be added to the Federation at a later time using the same JMRM bridge software as JCATS.	50%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Added NWARS-NG	Realistic HUMINT capability	Continue to develop and refine TRAC HUMINT model			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 H TA4 H TA5 M	Updated sensors in TACSIM, updated links to C2 systems (DCGS-A, etc); more realistic and sophisticated OOTW battle-space provided by JNEM NKE. IEWTPT	HUMINT requires some scripting;	Continue development of JLCCTC HUMINT upgrade.			MRX or seminar employment for Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: H						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Added NWARS-NG	Realistic HUMINT capability	Continue to develop and refine TRAC HUMINT model			

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - H	1. Improvements in IOS: a. TS IOS Interface b. DICE Interface c. Better interface w/ AFSERS d. IOS Data Translator for Link-16, IBS, USMTF Correlation & fusion. e. TBM Warning Capability f. NESI Compliance - NSA C&A g. Networks model for SIGINT 2. Improvements in AFSERS: a. Distributed DCGS Tng Cap b. MSI Support c. MTI Trainer d. SAR Support	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Training Audience(s) Supported	Major Enhancements	Major Shortfalls	Solutions
	e. High Throughput - DIS Entities f. Added BFT, Link-16 Interfaces, Frequency Allocation Management, Secure Link Encryption g. EBO Support h. TST Improvements 3. Expanded AFSERS integrations with other systems (JTACS, etc.) 4. Use of AFSERS for training AF INTEL officers at Goodfellow AFB	portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

23 (5) 2004 rank (2006 rank)
Train the Joint Interagency Coordination Group

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Low TA3- Low TA4- Medium TA5- Low	Very little has been done by M&S to address this Gap beyond the efforts to support representation of the civilian population. It is important to note that only part of this Gap solution can be supported with M&S.		Efforts under way to provide civilian population modeling will address some of these issues, more effort needs to be invested to examine the details of this requirement.	40%	L	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Low TA2 -Low TA3- Low TA4- Medium TA5- Low	Very little has been done by M&S to address this Gap beyond the efforts to support representation of the civilian population. It is important to note that only part of this Gap solution can be supported with M&S.		Efforts under way to provide civilian population modeling will address some of these issues, more effort needs to be invested to examine the details of this requirement.	30%	L	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM-ISM requires enhancements to simulate non-DoD agencies as discreet groups	Continue to refine and add to JNEM-ISM capabilities			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 H TA5 H						MRX or seminar employment for Operational training

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM-ISM requires enhancements to simulate non-DoD agencies as discreet groups	Continue to refine and add to JNEM-ISM capabilities			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

24 (20) 2004 rank (2006 rank)

Train staff to coordinate Personnel Recovery operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- High TA4- High TA5- Medium	The high resolution representation of SOF Operations and tactical missions allow for detailed physical modeling of these operations. The enhancements to the JLVC that support EW and Jamming missions further support these operations.	Representation of Civilian populations may effect certain Personnel Recovery missions.	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	90%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- High TA5- Medium	The high resolution representation of SOF Operations and tactical missions allow for detailed physical modeling of these operations. JTLS enhancements to Air Operations support this feature.	Representation of Civilian populations may effect certain Personnel Recovery missions. EW is played in JMRM but not at the same level of resolution as JLVC	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	80%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 H TA2 H TA3 H TA4 H TA5 H	JNEM NKE, C2 Sim/Stim	EW is currently a workaround with selected systems.	Develop a vigorous ECM system to replicate what PR operations require.			MRX or seminar employment for Operational training. JCATS is high resolution simulation which models air and naval assets as well as ground forces.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. AWSIM Flight Improvements 2. TADIL Integration / Control / DLARS 3. More detailed MISREPs and SITREPs 4. Entire Federation is now HLA Compliant	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22,	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Training Audience(s) Supported	Major Enhancements	Major Shortfalls	Solutions
		Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

25 (27) 2004 rank (2006 rank)
Train Global Ballistic Missile Defense

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- None TA2 -None TA3- Low TA4- Low TA5- Low	Unfortunately, much could be done in M&S to support this Gap closure but very little has been done. JCATS/ JLOD efforts to model primary and residual nuclear effects and enhancements to AWSIM/ATI to support BCS-NORAD C2 Systems are a start. The Federation can also support a range of anti-Missile Operations using MDST. In general this only scratches the surface of this requirement	Impacts of nuclear attacks on command and control, civilian infrastructure, and hardened sites like missile silos are several of the basic problems.		30%	L	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- None TA2 -None TA3- Low TA4- Low TA5- Low	Unfortunately, much could be done in M&S to support this Gap closure but very little has been done. JCATS/ JLOD efforts to model primary and residual nuclear effects	Impacts of nuclear attacks on command and control, civilian infrastructure, and hardened sites like missile silos are several of the basic problems. A comprehensive CBRNE Enhancement is planned for JLVC but not JMRM.		20%	L	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 H TA5 L	C2 Sim/Stim.					MRX or seminar employment for Operational training. EADSIM models missiles, radars, air defense and and fix ed wing air which provides high resolution TMD replication. CATS is high resolution simulation which models air and naval assets as well as ground forces.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: M TA2: M TA3: M TA4: M TA5: M	Development underway to enhance JSAF TBM threat models; ongoing integration with MDA tools.					Routine training of theater BMD with joint assets in Fleet Synthetic Training

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

26 (10) 2004 rank (2006 rank)
Conduct Global Strike Training

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -Medium TA3- Medium TA4- Medium TA5- Low	The evolution to a Global Playbox significantly addresses this gap. JLOD can now represent forces and targets in multiple theaters. ACE-IOS also supports this capability. The BDA Interaction that was added in FY06 adds greatly to reporting of Strike Missions.	Not all models in the Federation support Global Operations through the Joint Models are heading in that direction fast. It is possible to model anywhere desired for a Global Strike, but not Anywhere desired synamically during run-time.		70%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -Medium TA3- Medium TA4- Medium TA5- Low	JMRM is able to support a Global Environment with a high resolution drill-down capability in JCATS.	Not all fidelity needed to support Intelligence play for Global Strike Operations is included in JMRM.		70%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Federated with USAF ACE	Need to federate with USN and other non-US actors	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF can replicate the actual strike operations but not the CAP and process relationships required.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: H						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Federated with USAF ACE	Need to federate with USN and other non-US actors	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. Weather Effects 2. TADIL Integration / Control 3. JDLM Integration 4. Transfer of Control with NGTS 5. Airfield DMPI Level Targets 6. Link-16 Messages 7. AFSERS Video Images in MPEG2 8. More Detailed MISREPs / SITREPs 9. Make Air Refueling More Realistic 10. AWSIM Display 6000 Aircraft in Playbox 11. Improved TBM Capabilities 12. ACE-IOS WX MISREPs in IOS 13. AWSIM Multi-level Terrain 14. AWSIM Flight Improvements 15. Improvements in IOS: a. TS IOS Interface b. DICE Interface c. Better interface w/ AFSERS d. IOS Data Translator for Link-16, IBS, USMTF Correlation & fusion. e. TBM Warning Capability f. NESI Compliance - NSA C&A g. Networks model for	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Training Audience(s) Supported	Major Enhancements	Major Shortfalls	Solutions
	SIGINT h. Global Strike Adjudication 16. BLADE Integration 17. Entire Federation is now HLA Compliant 18. TST Improvements	9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

27 (36) 2004 rank (2006 rank)
Train Critical Infrastructure Protection

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	Almost all aspects of Physical security of sensitive/critical sites can be represented in JCATS/JSAF. The current service and DOE nuclear security community uses JCATS as the primary means to simulate security and protection exercises and risk analysis.	The physical security of critical sites can be represented but not all consequences on the civilian population and the dependencies of critical sites can be represented.		60%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	Almost all aspects of Physical security of sensitive/critical sites can be represented in JCATS. The current service and DOE nuclear security community uses JCATS as the primary means to simulate security and protection exercises and risk analysis.	The physical security of critical sites can be represented but not all consequences on the civilian population and the dependencies of critical sites can be represented.		60%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further enhancements to simulate the full range of CIP	Continue to refine and add to JNEM-ISM capabilities			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 M TA3 M TA4 H TA5 N						

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	JNEM-ISM enhanced capabilities with addition of neighborhoods and discreet civilian, force, and organizational groups.	JNEM requires further enhancements to simulate the full range of CIP	Continue to refine and add to JNEM-ISM capabilities			

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

28 (13) 2004 rank (2006 rank)
Operations/Intelligence Center Training, Integration, & Command Education

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Medium TA5- Low	This gap is well supported in the kinetic domain. Enhancements planned in the non-kinetic domain such as population representation will help to close this gap.	A full support for Effects-Based Planning in the non-kinetic domain must be provided before this gap can be closed.		50%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Low TA3- Low TA4- Medium TA5- Low	Almost all aspects of Physical security of sensitive/critical sites can be represented in JCATS. The current service and DOE nuclear security community uses JCATS as the primary means to simulate security and protection exercises and risk analysis.	The physical security of critical sites can be represented but not all consequences on the civilian population and the dependencies of critical sites can be represented.		60%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Addeed NWARS-NG	Realistic HUMINT capability	Continue to develop and refine TRAC HUMINT model			

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 M TA2 H TA3 H TA4 H TA5 N						

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: H						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	Added NWARS-NG	Realistic HUMINT capability	Continue to develop and refine TRAC HUMINT model			

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. Improvements in IOS: a. TS IOS Interface b. DICE Interface c. Better interface w/ AFSERS d. IOS Data Translator for Link-16, IBS, USMTF Correlation & fusion. e. TBM Warning Capability f. NESI Compliance - NSA C&A g. Networks model for SIGINT 2. Improvements in AFSERS: a. Distributed DCGS Tng Cap b. MSI Support c. MTI Trainer d. SAR Support e. High Throughput - DIS Entities f. Added BFT, Link-16 Interfaces, Frequency Allocation Management, Secure Link Encryption g. EBO Support h. TST Improvements 3. Expanded AFSERS integrations with other systems (JTACS, etc.) 4. Use of AFSERS for training AF INTEL officers at Goodfellow AFB	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.)	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Training Audience(s) Supported	Major Enhancements	Major Shortfalls	Solutions
		13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

29 (21) 2004 rank (2006 rank)
Strategic Information Assurance

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this come must come from a source other than M&S				N/A	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this must come from a source other than M&S				N/A	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						Has an excellent internal IA security systems but does not efficiently support strategic IA scenarios.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: H						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

30 (17) 2004 rank (2006 rank)
Continuity of Operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this come must come from a source other than M&S				N/A	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this must come from a source other than M&S				N/A	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF cannot replicate the continuity of operations requirements.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)	MRF uses JDLM to enhance logistics simulation	Simulation of sea-borne logistics	Develop interfaces with current and future service models for selective inclusion in MRF federation			JTTI+K beginning to develop architecture and may represent the way ahead

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

31 (34) 2004 rank (2006 rank)
Train on operational systems (dedicated bandwidth)

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this come must come from a source other than M&S				N/A	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this must come from a source other than M&S				N/A	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF may be able to conduct this training but there is not sufficient information to determine that.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: H TA2: H TA3: H TA4: H TA5: H						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. Weather Effects 2. TADIL Integration / Control 3. JDLM Integration 4. Transfer of Control with NGTS 5. Airfield DMPI Level Targets 6. Link-16 Messages 7. AFSERS Video Images in MPEG2 8. More Detailed MISREPs / SITREPs 9. Make Air Refueling More Realistic 10. AWSIM Display 6000 Aircraft in Playbox 11. Improved TBM Capabilities 12. ACE-IOS WX MISREPs in IOS 13. AWSIM Multi-level	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment for supporting operational training 6. Narrow capability to portray the effects of	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads development out over many years.

Training Audience(s) Supported	Major Enhancements	Major Shortfalls	Solutions
	Terrain 14. AWSIM Flight Improvements 15. BLADE Integration 16 GIANT Integration 17. Entire Federation is now HLA Compliant 18. TST Improvements	Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment 16. Lack of detailed terrain representation to portray realistic battlespace environment	

32 (32) 2004 rank (2006 rank)
Train on Consequence Management Operations

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Low TA5- Low	Enhancements under way to model disease and nuclear effects on population and natural disaster weather modeling greatly support this Gap.	Civilian population and Infrastructure modeling.		60%	M	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- Medium TA2 -Medium TA3- Low TA4- Low TA5- Low	The JTLS civilian population Model greatly supports this gap. The focus will be on providing humanitarian assistance for disaster relief scenarios.	Civilian population and Infrastructure modeling.		60%	M	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF may be able to conduct this training but there is not sufficient information to determine that.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 - N TA2 - M TA3 - M TA4 - H TA5 - H	Underway Mission Rehearsal is needed requiring communications and bandwidth connectivity. NCTE & GIG expected to resolve.	BFTT & its proposed replacement TSTS is dependent on NCTE & GIG connectivity to operate at sea in a multi-shp mode.	NCTE & GIG must expand to provide underway synthetic evmt services. Fund & field TSTS.			BFTT can develop a limited capability in this area. TSTS is addressing shortfalls in this area.

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

33 (11) 2004 rank (2006 rank)
Provide Special Operations Crisis Action Procedures Training

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -Medium TA3- Medium TA4- Medium TA5- Low	The JTDS and supporting efforts to create large terrain repositories assist in providing a high resolution model of an environment quickly.	Civilian population and Infrastructure modeling.		70%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -Medium TA3- Medium TA4- High TA5- Low	The JTDS and supporting efforts to create large terrain repositories assist in providing a high resolution model of an environment quickly.	Civilian population and Infrastructure modeling.		70%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF may be able to conduct this training but there is not sufficient information to determine that.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -Medium TA3- Medium TA4- N/A TA5- N/A	SOF Operations in the kinetic domain can be fully represented and provided as support for the training audience	Non-kinetic missions like Psyops must be provided.	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	70%	H	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- High TA2 -High TA3- Medium TA4- N/A TA5- N/A	SOF Operations in the kinetic domain can be fully represented and provided as support for the training audience	Non-kinetic missions like Psyops must be provided. JTLS has the concept of PSYOPS but not at the level of fidelity desired.	This gap should be evaluated at the FY08 Joint Training Requirements Group (JTRG) for closure.	70%	H	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF may be able to conduct this training but there is not sufficient information to determine that.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
TA1 - M TA2 - H TA3 - H TA4 - H TA5 - L	1. Improvements in IOS: a. TS IOS Interface b. DICE Interface c. Better interface w/ AFSERS d. IOS Data Translator for Link-16, IBS, USMTF Correlation & fusion. e. TBM Warning Capability f. NESI Compliance - NSA C&A g. Networks model for SIGINT 2. Improvements in AFSERS: a. Distributed DCGS Tng Cap	1. Weather integration is not finished 2. Transfer of control with NGTS is not finished 3. AWSIM flight improvements are continuous 4. Lacks the fidelity to fully support Live and Virtual integration with tactical level C2 5. Lacks automated user interface tools to support the manpower reduction requirement while providing a scalable environment	For all ACE (and all individual components within ACE) improvements, the single limiting factor is reduced funding available to make requested changes. AFAMS has hard user-requested requirements for each component, sold development plans, and experienced developers for each ACE component, but suffers from significantly reduced development dollars. This spreads

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
	b. MSI Support c. MTI Trainer d. SAR Support e. High Throughput - DIS Entities f. Added BFT, Link-16 Interfaces, Frequency Allocation Management, Secure Link Encryption g. EBO Support h. TST Improvements 3. Expanded AFSERS integrations with other systems (JTACS, etc.) 4. Use of AFSERS for training AF INTEL officers at Goodfellow AFB	for supporting operational training 6. Narrow capability to portray the effects of Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) on air base operations 7. Does not provide Special Operations individual, ground based entities (small, mobile, etc.) and the interaction with air platforms 8. Minimal ability to portray second order (cascading) effects in applying Effects Based Operations (EBO) concepts 9. Does not currently support Agile Combat Support (ACS) functions or processes 10. Lack of modeling of emerging operational systems (e.g., F-22, Small Diameter Bomb (SDB), Armed UAVs) 11. Limited Interface to existing and future LVC capabilities supporting logistics, special operations, space, and cyberspace 12. Limited integration of Information Operations (IO) with high side model functions (cyberspace, national systems, etc.) 13. Restricted integration with current real-world ISR sensors and high side model functions 14. Ineffective ability to portray Non-Traditional ISR (NTISR) capabilities employed in current operations 15. Limited ability to integrate weather and environmental effects within the operational environment	development out over many years.

Air and Space Constructive Environment (AFAMS)			
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**
		16. Lack of detailed terrain representation to portray realistic battlespace environment	

Joint Live Virtual Constructive (JLVC) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this come must come from a source other than M&S				N/A	

Joint Multi-Resolution Model (JMRM) (JWFC)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1- N/A TA2 -N/A TA3- N/A TA4- N/A TA5- N/A	Support for closing this must come from a source other than M&S				N/A	

Multi-Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Entity Resolution Federation (PEOSTRI)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 N TA2 N TA3 N TA4 N TA5 N						ERF may be able to conduct this training but there is not sufficient information to determine that.

Battle Force Tactical Trainer (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Navy (NCTE)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1: L TA2: L TA3: L TA4: L TA5: L						

USMC (TRASYS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**
TA1 (H) TA2 (H) TA3 (H) TA4 (M) TA5 (N)						

Air and Space Constructive Environment (AFAMS)						
Training Audience(s) Supported	**Major Enhancements**	**Major Shortfalls**	**Solutions**	**% Complete**		**Comments**

Table D-2. Training Audiences within the TC AoA Gaps Addressed by the Data Call Federations.

2004 TC AoA Rating & Gap	TA(1) Regional COCOM or Multi-COCOM	TA (2) JTF (Operation-al)	TA (3) Service Component (Operation-al)	TA(4) Service (Tactical)	TA (5) Crew & Individual (Tactical)
1 Train Combined Joint Task Force Staffs (includes need for Individual Joint Training)	H - 3 M - 3 L - 1 N - 1	H - 4 M - 3 L - 1 N – 0	H - 4 M - 2 L - 2 N - 0	H - 5 M - 3 L - 0 N - 0	H - 2 M - 0 L - 4 N - 2
2 Train Standing Joint Force Headquarters Staff (includes need for Individual Joint Training)	H - 3 M - 3 L - 1 N – 1	H - 4 M - 3 L - 1 N - 0	H - 4 M - 2 L - 2 N - 0	H - 3 M - 5 L - 0 N – 0	H - 1 M - 1 L - 4 N - 2
3 Train on Crisis Action planning and deployments	H - 4 M - 1 L - 0 N - 3	H - 4 M - 1 L - 0 N - 3	H - 3 M - 2 L - 0 N - 3	H - 3 M - 5 L - 0 N - 0	H - 0 M - 2 L - 1 N - 5
4 Provide faster/higher fidelity mission rehearsal	H - 5 M - 0 L - 0 N - 3	H - 5 M - 1 L - 0 N - 2	H - 3 M - 3 L - 0 N - 2	H - 2 M - 3 L - 0 N - 3	H - 0 M - 2 L - 1 N - 5
5 Train forces on joint urban operations	H - 5 M - 0 L - 2 N - 1	H - 6 M - 0 L - 1 N - 1	H - 4 M - 2 L - 1 N - 1	H - 2 M - 4 L - 1 N - 1	H - 2 M - 0 L - 2 N - 4
6 Train forces on IO (including Information Warfare, Computer Network Exploitation, Computer Network Defense, and Computer Network Attack)	H - 3 M - 2 L - 1 N - 2	H - 4 M - 0 L - 2 N - 2	H - 4 M - 0 L - 2 N - 2	H - 2 M - 4 L - 0 N - 2	H - 0 M - 1 L - 3 N - 4

7 Train forces in a Joint Interagency Intergovernmental, Multinational environment (including intelligence community participants)	H - 3 M - 2 L - 1 N - 2	H - 3 M - 4 L - 1 N - 0	H - 3 M - 5 L - 0 N - 0	H - 3 M - 3 L - 2 N - 0	H - 1 M - 1 L - 4 N - 2
8 Provide Homeland Defense Training	H - 3 M - 4 L - 0 N - 1	H - 3 M - 4 L - 1 N - 0	H - 3 M - 4 L - 1 N - 0	H - 2 M - 5 L - 1 N - 0	H - 1 M - 2 L - 2 N - 3
9 Provide multi-command missile defense training	H - 3 M - 2 L - 1 N - 2	H - 3 M - 3 L - 1 N – 1	H - 2 M - 3 L - 2 N - 1	H - 2 M - 5 L - 0 N - 1	H - 1 M - 1 L - 2 N - 4
10 Train forces in enemy Chemical, Biological, Radiological, Nuclear, and Electromagnetic exploitation and destruction	H - 3 M - 1 L - 1 N - 3	H - 2 M - 2 L - 1 N - 3	H - 2 M - 2 L - 1 N - 3	H - 2 M - 2 L - 1 N - 3	H - 0 M - 2 L - 1 N - 5
11 Train to operate in Chemical, Biological, Radiological, Nuclear, and Electromagnetic environment	H - 3 M - 1 L - 1 N - 3	H - 3 M - 1 L - 1 N - 3	H - 2 M - 0 L - 3 N - 3	H - 2 M - 2 L - 1 N - 3	H - 0 M - 1 L - 2 N - 5
12 Train on Effects Based Planning/Operations	H - 2 M - 1 L - 4 N - 1	H - 3 M - 2 L - 2 N - 1	H - 3 M - 2 L - 2 N - 1	H - 2 M - 4 L - 1 N - 1	H - 0 M - 2 L - 2 N - 4
13 Train Theater/Strategic forces to conduct C4I operations using Collaborative Information Environment	H - 3 M - 3 L - 0 N - 2	H - 3 M - 3 L - 0 N - 2	H - 3 M - 3 L - 0 N - 2	H - 2 M - 4 L - 0 N - 2	H - 2 M - 0 L - 2 N - 4

14 Train forces on realistic logistics requirements (including Reception Staging and Onward Movement Integration)	H - 4 M - 0 L - 3 N - 1	H - 4 M - 1 L - 2 N - 1	H - 3 M - 2 L - 2 N - 1	H - 3 M - 2 L - 2 N - 1	H - 0 M - 1 L - 4 N - 3
15 Practice AC/RC Integration and Mobilization training	H - 2 M - 0 L - 1 N - 5	H - 2 M - 0 L - 1 N - 5	H - 2 M - 0 L - 1 N - 5	H - 0 M - 2 L - 2 N - 4	H - 0 M - 1 L - 0 N - 7
16 Train forces on Stability and Support Operations	H - 2 M - 4 L - 0 N - 2	H - 2 M - 4 L - 0 N - 2	H - 2 M - 2 L - 2 N - 2	H - 0 M - 2 L - 2 N - 4	H - 0 M - 2 L - 2 N - 4
17 Train forces on Military Assistance to Civilian Authorities Operations	H - 2 M - 0 L - 3 N - 3	H - 2 M - 2 L - 2 N - 2	H - 2 M - 0 L - 4 N - 2	H - 0 M - 4 L - 2 N - 2	H - 0 M - 0 L - 3 N - 5
18 Train Special Operations Forces and conventional forces for integrated operations	H - 4 M - 1 L - 1 N - 2	H - 4 M - 1 L - 1 N - 2	H - 2 M - 3 L - 1 N - 2	H - 3 M - 2 L - 1 N - 2	H - 0 M - 3 L - 1 N - 4
19 Train forces (operational and tactical level) to use National Intelligence Systems	H - 2 M - 4 L - 0 N - 2	H - 3 M - 2 L - 1 N - 2	H - 3 M - 2 L - 1 N - 2	H - 1 M - 5 L - 0 N - 2	H - 0 M - 1 L - 3 N - 4
20 Train routinely with the Joint Operation Planning and Execution System	H - 4 M - 1 L - 0 N - 3	H - 4 M - 1 L - 0 N - 3	H - 3 M - 2 L - 0 N - 3	H - 2 M - 1 L - 2 N - 3	H - 2 M - 1 L - 0 N - 5

21 Train routinely with new adaptive planning and deployment system	H - 4 M - 0 L - 1 N - 3	H - 4 M - 0 L - 1 N - 3	H - 4 M - 0 L - 1 N - 3	H - 2 M - 2 L - 1 N - 3	H - 2 M - 0 L - 1 N - 5
22 Train Intelligence community as they fight (including all levels as a tactical participant)	H - 3 M - 4 L - 0 N - 1	H - 6 M - 1 L - 0 N - 1	H - 7 M - 0 L - 0 N - 1	H - 5 M - 2 L - 0 N - 1	H - 2 M - 1 L - 2 N - 3
23 Train the Joint Interagency Coordination Group	H - 2 M - 1 L - 3 N - 2	H - 2 M - 1 L - 3 N - 12	H - 2 M - 1 L - 3 N - 2	H - 1 M - 4 L - 1 N - 2	H - 1 M - 0 L - 3 N - 5
24 Train staff to coordinate Personnel Recovery operations	H - 5 M - 1 L - 1 N - 1	H - 6 M - 0 L - 1 N - 1	H - 5 M - 1 L - 1 N - 1	H - 4 M - 2 L - 1 N - 1	H - 1 M - 2 L - 2 N - 3
25 Train Global Ballistic Missile Defense	H - 2 M - 2 L - 0 N - 4	H - 2 M - 2 L - 0 N - 4	H - 2 M - 2 L - 2 N - 2	H - 1 M - 3 L - 2 N - 2	H - 0 M - 1 L - 3 N - 4
26 Conduct Global Strike Training	H - 4 M - 1 L - 0 N - 3	H - 3 M - 2 L - 0 N - 3	H - 3 M - 2 L - 0 N - 3	H - 2 M - 3 L - 0 N - 3	H - 1 M - 0 L - 3 N - 4
27 Train Critical Infrastructure Protection	H - 2 M - 3 L - 1 N - 2	H - 2 M - 3 L - 1 N - 2	H - 2 M - 1 L - 3 N - 3	H - 1 M - 4 L - 1 N - 2	H - 0 M - 0 L - 3 N - 5
28 Operations/Intelligence Center Training, Integration, & Command Education	H - 3 M - 4 L - 0 N - 1	H - 5 M - 1 L - 1 N - 1	H - 5 M - 0 L - 2 N - 1	H - 3 M - 4 L - 0 N - 1	H - 1 M - 0 L - 3 N - 4
29 Strategic Information Assurance	H - 3 M - 0 L - 0 N - 5	H - 3 M - 0 L - 0 N - 5	H - 3 M - 0 L - 0 N - 5	H - 1 M - 2 L - 0 N - 5	H - 1 M - 2 L - 0 N - 5

30 Continuity of Operations	H - 2 M - 0 L - 1 N - 5	H - 2 M - 0 L - 1 N - 5	H - 2 M - 0 L - 1 N - 5	H - 0 M - 2 L - 1 N - 5	H - 0 M - 0 L - 1 N - 7
31 Train on operational systems (dedicated bandwidth)	H - 3 M - 1 L - 0 N - 4	H - 4 M - 0 L - 0 N - 4	H - 4 M - 0 L - 0 N - 4	H - 2 M - 2 L - 0 N - 4	H - 1 M - 0 L - 1 N - 6
32 Train on Consequence Management Operations	H - 2 M - 2 L - 1 N - 3	H - 2 M - 3 L - 1 N - 2	H - 1 M - 2 L - 3 N - 2	H - 1 M - 2 L - 3 N - 2	H - 1 M - 2 L - 3 N - 2
33 Provide Special Operations Crisis Action Procedures Training	H - 4 M - 0 L - 1 N - 3	H - 2 M - 2 L - 1 N - 3	H - 2 M - 2 L - 1 N - 3	H - 1 M - 3 L - 1 N - 3	H - 1 M - 3 L - 1 N - 3
34 Provide intelligence community Special Operations Forces specific training at the Operational level	H - 4 M - 1 L - 1 N - 2	H - 4 M - 1 L - 1 N - 2	H - 3 M - 2 L - 1 N - 2	H - 1 M - 2 L - 1 N - 4	H - 0 M - 0 L - 2 N - 6
35 Plan, coordinate and practice Mission Assurance	H - 2 M - 0 L - 1 N - 5	H - 2 M - 0 L - 1 N - 5	H - 2 M - 0 L - 1 N - 5	H - 0 M - 2 L - 1 N - 5	H - 0 M - 0 L - 1 N - 7

[a] Summed across all responding federations. Responses from each federation are provided in Appendix D in Volume I of this paper.

H (High): The federation/simulation will fully support (or nearly so) the training audience

M (Medium): The federation/simulation, will support the training audience

L (Low): The federation/simulation will support the training audience to a minor degree.

N (Not applicable): The federation/simulation will not the training audience.

APPENDIX E—ACRONYMS

AAR	After Action Review
AARS	After Action Review System
ABCS	Army Battlefield Command System
ACE	Air and Space Constructive Environment
ACRES	Adaptive Communications Reporting Simulation
ACS	Agile Combat Support
ACTF	Army Constructive Training Federation
ADL	Advanced Distributed Learning
ADSI	Air Defense Simulation Integrator
AFMSTT	Air Force Modeling & Simulation Training Toolkit
AFSERS	Air Force Synthetic Environment for Reconnaissance and Surveillance
AoA	Analysis of Alternatives
ARCHER	Archiving and Enhanced Retrieval System
ASCOT	Airspace Control and Operations Trainer
ASTi	Army Secure Tactical Initiative
AWSIM	Air Warfare Simulation
BCTF	Battle Command Training Program
BFTT	Battle Force Tactical Trainer
BICM	BCTF Intelligence Collection Model
C4I	Command, Control, Communications, Computers, and Intelligence
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CBRNE	Chemical, Biological, Radiological, Nuclear, and Explosive
CBS	Corps Battle Simulator
CJTF	Commander, Joint Task Force
COCOM	Combatant Command
COMINT	Communications Intelligence
CONOPS	Concept of Operations

COP	Common Operational Picture
DCE	Dynamic Communications Environment
DIME	Diplomatic, Information, Military, Economic
DISA	Defense Information Systems Agency
DISCO	Deployable Simulation for Collaborative Operations
DoD	Department of Defense
DPS	Defense Planning Scenarios
DTIC	Defense Technical Information Center
DVTE	Deployable Virtual Training Environment
EBO	Effects Based Operations
ERF	Entity Resolution Federation
ESG	Executive Steering Group
EW	Electronic Warfare
FMS-D	Full Mission System- Distributed
FOM	Federation Object Model
GEM	Generic External Module
GIG	Global Information Grid
GWOT	Global War on Terror
HAZMAT	Hazardous Material
HLA	High Level Architecture
HUMINT	Human Intelligence
ICD	Initial Capability Document
IDA	Institute for Defense Analyses
IO	Information Operations
IOS	Information Operations Suite
IPT	Integrated Product Team
ISM	Independent Stimulation Module
ISO	Information Operations Suite
ISR	Intelligence, Surveillance, and Reconnaissance
IWEG	Information Warfare Effects Generator
JAEC	Joint Assessment and Enabling Capability
JCAS	Joint Close Air Support

JCATS	Joint Conflict and Tactical Simulation
JCB	Joint Capabilities Board
JCIDS	Joint Capabilities Integration Development System
JDLM	Joint Deployment Logistics Model
JECEWSI	Joint Electronic Combat Electronic Warfare Simulation
JFCOM	Joint Forces Command
JKDDC	Joint Knowledge Development and Distribution Capability
JLCCTC	Joint Land Component Constructive Training Capability
JLOD	JCATS Low Overhead Driver
JLVC	Joint Live Virtual Constructive
JMET	Joint Mission Essential Task
JMRM	Joint Multi-Resolution Model
JNEM	Joint Non-Kinetic Effects Model
JNETS	Joint Network Simulation
JNTC	Joint National Training Capability
JOISIM	Joint Operations Information Simulation
JOPES	Joint Planning and Execution System
JQUAD+	Suite of five computer simulation models for warfare command and control
JROC	Joint Requirements Oversight Council
JSAF	Joint Semi-Automated Force
JSIMS	Joint Simulation System
JTA	Joint Technical Architecture
JTC	Joint Training Confederation
JTF	Joint Task Force
JTIMS	Joint Training Information Management System
JTLS	Joint Theater-Level Simulation
JTRG	Joint Training Requirements Group
JTS	Joint Training System
JUO	Joint Urban Operations
JWFC	Joint Warfighting Center
LOGFED	Logistics Federation
LVC	Live, Virtual, and Constructive

M&S	Modeling and Simulation
MASINT	Measurement and Signal Intelligence
MDST	Missile Defense Space Tool
MLS	Multi-Level Security
MRF	Multi-Resolution Federation
MRX	Mission Rehearsal Exercise
MSCO	Modeling and Simulation Coordination Office
MSSC	Modeling and Simulation Steering Committee
MSEL	Master Scenario Events List
MUSE	Multiple Unified Simulation Environment
NCTE	Navy Continuous Training Environment
NTISR	Non-Traditional ISR
NGO	Non-governmental Organization
NORTHCOM	Northern Command
NWARS	National Warfare Simulator
NWARS-NG	National Warfare Simulator Next Generation
OneSAF	One Semi-Automated Force
OUSD(P&R)	Office of the Under Secretary of Defense (Personnel and Readiness
PMESII	Political, Military, Economic, Social, Information, Intelligence
RTI	Run Time Infrastructure
RTM	Run Time Manager
SAF	Semi-Automated Force
SASO	Stability and Support Operations
SDB	Small Diameter Bomb
SELS	Scalable Entity Level Simulation
SIGINT	Signals Intelligence
SIMPLE	Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions
SIPRNET	Secret Internal Protocol Router Network
SITH	Simulation Interface Test Harness
SOCOM	Special Operations Command
SSE	Squad Synthetic Environment
STRATCOM	Strategic Command

T2	Training Transformation
TACSIM	Tactical Simulation
TBMCS	Theater Battle Management Core System
TC	Training Capabilities
TENA	Test and Training Enabling Architecture
TENCAP	Tactical Exploitation of National Capabilities
TMSBP	Training Community Modeling and Simulation Business Plan
UAV	Unmanned Aerial Vehicle
UJTL	Universal Joint Task List
VV&A	Validation, Verification, and Accreditation
USAF	United States Air Force
WARSIM	Warfighter's Simulation
WIM	WARSIM Intelligence Module

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14. ABSTRACT

The Training Community Modeling and Simulation (M&S) Business Plan (TMSBP) provides linkages between the training functional stakeholders as represented in the Training Transformation (T2) Senior Advisory Group (SAG) and Executive Steering Committee (ESG) to the Department's larger M&S strategic vision and goals. Since needs and technology are constantly evolving, the TMSBP will continue to evolve as a living document. The 2007 Edition of the TMSBP is provided to inform the M&S Steering Committee (MS SC) project call for near-term (FY 09) M&S projects, and to provide justification for major investments in training capabilities enabled by M&S in future Program Objective Memoranda (POM) submissions. It also identifies capabilities that the training community can contribute to greater interoperability, reuse, and efficiencies among the cross-cutting community. Volume I of the 2007 TMSBP provides an initial review of the models, simulations, and tools identified as part of the Training Capabilities Analysis of Alternatives (AoA) base case of capabilities. Volume II provides additional data and analysis details from a data call to the training community in the summer of 2007.

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